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on

Telecommunications and Participation at

The University of Montreal

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TABLE OF CONTENTS

This is a Report on the Seminar and does
not necessarily represent the views of the Department
or of the federal Government. No commitment for
future action should be inferred from the recommendations
of the participants.

This Report is to be considered as a back-
ground working paper and no effort has been made to
edit it for uniformity of terminology with other
studies.

<u>REPORT OF THE SEMINAR ON TELECOMMUNICATIONS AND PARTICIPATION</u>

<u>INTRODUCTION</u>

"Technology can give society just about what it wants. But what does society want? It is up to you to tell us." That impassioned plea came from an engineer at the three-day seminar on Telecommunications and participation. Held at the University of Montreal, the seminar was attended by some 70 communications experts, academics, businessmen, public servants and private citizens.[1]

The objective of the meeting was: "To consider ways by which telecommunications technology and systems can be developed so as to increase the opportunities for participation by individuals, groups and institutions ....(and) to propose guidelines for the development of telecommunications so as to increase the opportunities for participation." Within that broad context, two propositions were stated as being taken for granted-though both in fact were at times questioned: (1) "That increasing participation in the decision-making process by groups and individuals is both desirable and inevitable," and (2) "That telecommunications technology can be developed so as to increase the opportunities for participation."

Panel discussions were organized on the following topics: <u>Political Aspects; Social Processes; Participation through the Mass Media</u> and <u>Techniques for Creative Participation</u> - that is, participation

(1) By disciplines those present comprised: political scientists, 6; sociologists, 7; computer specialists, 6; psychologists, 2; engineers, 6; lawyers, 4; broadcasters, 9; journalists, 6; filmmakers, 2; educators, 4; others, 10. By languages the breakdown was 23 francophones and 39 anglophones of whom 13 (and all francophones) were bilingual.

by citizens with access to the actual instruments of communication.
Following the panel discussions the gathering divided into small
workshops. Each workshop produced a report on its deliberations for
general discussion at the final plenary session.

The report is divided into three chapters. The first
describes the Seminar as a whole, including the principal points made
by panelists and other speakers, key questions and comments and the
workshop discussions and reports. Chapter Two is a summary of those
position papers which, as requested, were prepared in advance [2], and
Chapter Three reports the conclusions of the meeting.

A multi-disciplinary seminar, particularly one covering as
much ground as "telecommunications and participation", is an untidy
process -- appropriate for generating ideas rather than reaching
decisions. The engineer quoted earlier never did receive the specific
guidelines he demanded, but his question nonetheless generated a spirited
debate, and many interesting suggestions. This report at times imposes
a more logical order upon the discussions than may actually have existed
amid the polemic and confrontation; elsewhere it is unBowdlerized,
on the gounds that at times confrontation carries its own logic.

(2) A complete list of panelists and of position papers together with
the terms of reference for the Seminar are contained in Appendix A.

CHAPTER ONE

<u>The Haves and The Have Nots</u>

Optimists & Pessimits

In a big city, a lost soul searches in the telephone book for a number, calls a specially-manned Suicide Center -- and perhaps a life is saved. In the distant Lac Saint Jean - Saguenay region of Quebec, miners and pulp workers and housewives get up early or stay up late to watch educational TV broadcasts -- and are brought into a world they could never otherwise have entered. In Pond Inlet on Baffin Island, Eskimos operate their own radio station with an old 20-watt transmitter -- and give their community a collective voice.

All these are examples of telecommunications used as a tool for citizen participation. So also are radio 'open-line' shows which bring public figures into debate with ordinary citizens, and cable television systems whose spare channel capacity gives community groups and institutions a chance to air programs that would never otherwise have been broadcast.

At the present time, some of the key elements of communications technology - film, videotape and audio equipment - are becoming progressively cheaper, easier to operate and accessible to more and more people. Each year thousands of students learn the fundamentals of broadcasting and film-making, and are initiated into the mysteries of data-processing. From cameras to computers, the new tools of communication are becoming as commonplace to the young as the telephone, the typewriter and the television set are to the present generation.

The process has barely begun. National computer networks promise, eventually, instant information for the asking. In the "wired city" of the future, the individual will be able to summon up or send programs and information as required. On the surface, the possibilities for increased individual participation and fulfillment seem boundless. And yet - the power of information technology to change

our social, political and cultural environment does not necessarily mean change for the better. This power is just as capable of stifling as it is of fulfilling the rising demand for mass participation.

As they discussed the inherent possibilities for good and ill, people attending the Seminar could be divided roughly into optimists and pessimists: or those who believed that information technology can be exploited to serve social needs, and those who felt that the technology is too powerful for effective political or social controls, and may ultimately harm society. Although individual speakers often swung between the two points of view, the basic conflict persisted throughout the meeting, producing both a lively clash of ideas and, at times, open confrontation.

From the outset, there was open disagreement over the potential relationship between telecommunications and participation. The optimistic view, in the words of one sociologist, was that telecommunications could create "a kind of Jeffersonian democracy based on social and political participation," if it were properly used. On the other hand, the keynote speaker, Alan Westin of Columbia University, argued that the reality of telecommunications is quite the opposite from its apparent promise. "Information technology", he said, "as an inevitable function of its complexity and cost, reinforces those who already hold power" - big government, big corporations, big unions, big churches and big universities.

Léon Dion of Laval saw the same dangers as Westin, only more starkly. Information technology "accentuates the predominance of the government over the legislature, the bureaucracy and the judiciary.

It amplifies the power of speech, and encourages politicans to hide in the secrecy of technicalities."

According to the pessimists, the much-heralded data banks may prove to be a very mixed blessing, creating a "dossier society," in which a man is judged on his print-out instead of his person. Information affluence could in fact lead to "information pollution", causing ordinary citizens to flee from the flood of data, images and sounds, and to abandon government to an elite which alone knows how to exploit the power of the new technology - a "regime of the demago-technocratic type", in Dion's words. And even if no charismatic technocrats emerge, can society withstand the "future shock", or psychic disturbance, to which it is subjected by incessant changes introduced by the new technology of information?

On a somewhat different level, the pessimists at the seminar were given proof that technology, at times, fails to work as expected. In a dynamic demonstration staged by Jean Cloutier of the Aduio-Visual Center, University of Montreal, Seminar participants were divided into three groups (anglophone, francophone and bilingual) and linked by two-way, audio-visual communications systems. Most found the experience more frustrating than exhilarating -- and revealing, simply because it was frustrating. (1)

Quite apart from the frustrations of that experience, an anti-technology mood was detectable at the seminar. One participant, in fact, declared his conviction that the meeting had been organized as a soft-sell attempt to co-opt intellectuals into helping to peddle

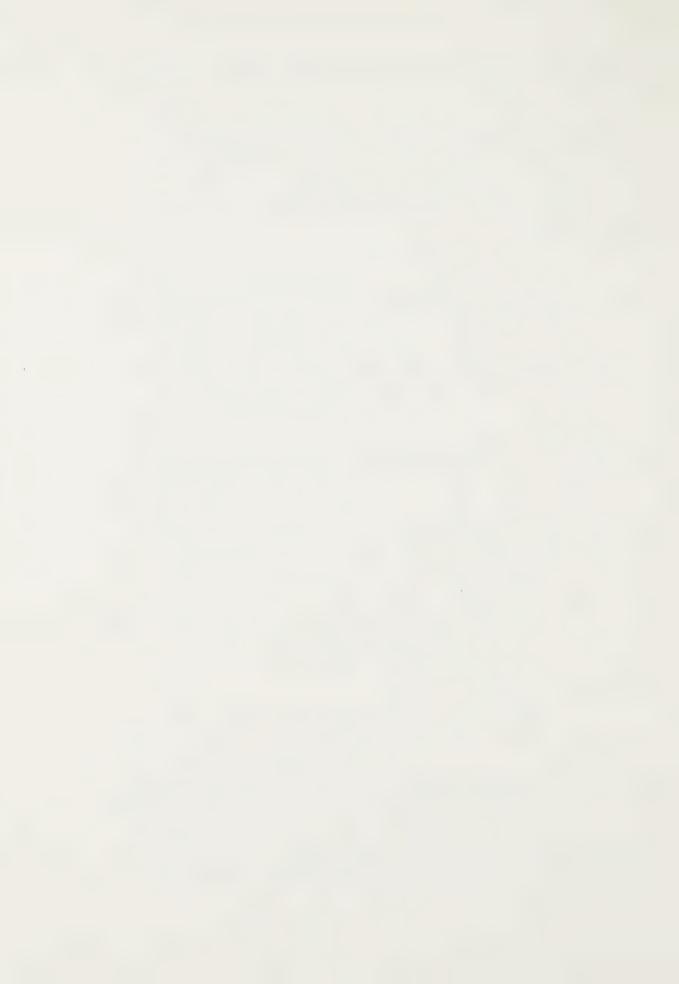(1) An audio-visual report on this experience is in preparation.

technology. "I am not going to be party to any scheme by bureau-
crats to shore up their rotting empires", he announced. At the
other extreme a businessman listened to a series of attacks on
technology and then exploded: "You are nothing but a bunch of
kooks tossing out way-out ideas that are humiliating to industry."

A Nation of Equals

Telecommunications can be defined easily and precisely -
it means communicating at a distance. But defining participation is
more difficult. Sociologist Arnold Rockman saw participation as "the
sending of messages through communications networks", and wanted to
know who is sending these messages, and who should be. Political
scientist Leon Dion drew a distinction between participation through
"integration", which telecommunications tend to favour in liberal
societies where "the objective is to mobilize various publics through
commercial and political advertising and through public affairs
programs", participation through "delegation", characteristic of
representative democracies; and participation through "commitment",
or the full contribution of all the members of a society, in all their
diversity. This last was the kind of participation which tele-
communications should be fostering.

According to one workshop report, if there is a cost to
participation, it is "nothing to the cost of failing to permit partic-
ipation". The alternative was a society increasingly divided into
participating "haves" and alienated "have nots". The goal must be to
use telecommunications systems to permit citizen participation on a
scale unequalled since Ancient Greece and Pioneer New England.

"A nation composed of equals and near-equals in full
communication with one another across the whole land can be nothing
other than the strongest kind of society imaginable", said Rockman.
And according to Donald Snowden, Director of Extension, Memorial
University, Newfoundland, "a nation which does not continuously
involve the collective intelligence and experience of its citizens
as a deliberate act of policy in shaping the destiny of the country,
is a nation with an especially regrettable dimension of poverty."

Telecommunications have not only multiplied the opportunities
for participation, but they have increased the demand, to the extent
that "Say's Law" is operating, and supply is manufacturing demand. At
the same time, the abundant supply of information systems creates
"rising frustrations", said Dale Thomson, a political scientist at
Johns Hopkins University. They "make available new concepts,
alternative ways of life. They erode established customs and values.
They create new demands without satisfying them, and lead to dissatis-
faction ... to social and political unrest, social and political
mobilization."

The march inspired by communications systems, according to
Thom, is leading toward a "political revolution which would engender a
new civilization ... a new communism". The telemedia, or mass media
which distribute their messages by means of telecommunications, have
"taken a place among the most powerful instruments of socialization ...
propagating the values of the post-modern era." The telemedia, even
if owned by the old, "are produced for the young, if not by them ...
Television in particular, neglects adults and ignores the old." The

until now were the ones who determined the culture, particularly
the political culture, of our society. Today, because of tele-
communications, the young have taken their place.

In Dion's view, "the immense spiritual thirst of our
contemporaries will not be satisfied by books". Instead, "an audio-
visual civilization is being substituted before our eyes for the
civilization of the book."

Overwhelmingly, participants agreed with these descriptions
of the unexpected and unplanned impact of information technology. As
keynote speaker Alan Westin commented: "we have always taught our
children the institutional structures -- the President, the police,
the mailman -- and it is only later that they came to understand the
human ingredient and its conflicts". Television has reversed this
process, and glorified the individual in conflict. The media,
unconsciously, "are teaching our children that all institutions are
bad."

Quite apart from its accidental, environmental effects,
however, telecommunications technology can be deliberately applied to
produce social change and political development. Snowden described
community development projects in rural Newfoundland and Alaska where
film and video-tape had given a voice and an awareness to people who
never had them before. Vincent Ross, Director-General of Planning for
the Quebec Department of Education, described the impact of the Tévec
adult education program, which used television and computer 'sense-a-mark'
cards in the Lac Saint Jean-Saguenay region. And radio 'open line' shows
across Canada provide a different kind of opportunity for public involvement.

"It is one thing to write a letter to the Editor complaining about City Council", observed John Graine, Director of Radio, CBC, "It is another thing to debate that matter with a City Councillor before several thousand witnesses on the air."

Many other possibilities suggested at the seminar included hot-line phones by which citizens could communicate directly with officials, and computerized referendums on public issues. Soucy Gagné of Sorécom proposed televised debates between public figures, with the watching public being sampled in mid-debate - although a computer scientist advised that "instant" sampling of large numbers of people would present immense technical difficulties.

Today cable systems, with their potential for delivering 40 or 50 television channels into a single home, represent perhaps the most dramatic aspect of the new technology. Charles Templeton, Vice-President of CTV, saw cable systems becoming "virtually a utility ... proliferating the number of available channels, intensifying local programming and increasing the participation of the general public in broadcasting", both as recipients of minority - appeal programs and as program originators through local and community "educational, political, ethnic, theatrical and service organizations". Robert Russel of Orba Information took the selectivity of cable systems one step further by arguing in favour of "demand programming", by which individuals could call up films and video-tapes of their own choice.

Loss of Concensus

According to Alan Westin, "the key question is the redistribution of power", and many people present felt this could be best achieved by

decentralizing communications technology - by "demand programming",
by community involvement in cable television, by "citizens band"
television, by do-it-yourself radio stations operated entirely by
local groups, like those in the ghettoes of New York. A parallel
approach would be mass education of the public in the techniques of
communications systems, in order to create "a nation of producers".
The technology must be "de-mystified", said Jean Cloutier of the
University of Montreal.

But what would be the end result of this decentralizing
process? What would happen to the "common experiences, common symbols,
common norms", upon with society is built, as political scientist
Peter Regenstreif reminded the group. "In the world of one-station
for one-listener, do we reduce the feeling of community which comes
from shared experience?", asked Craine. "The generation that will gain
influence in the '90s will probably not mourn the disappearance of this
mass experience. Instead, do they see a world of city states with
highly decentralized forms of government? All connected in isolation?"

But how much decentralization of this kind could a nation such
as Canada afford? On the one hand Soucy Gagné urged "multiplying the
centers of production in order to take account of regional differences.
On the other hand, Roy Faibish of Bushnell Television warned that the
rapid increase in local programming made possible by cable systems would
distract peoples' attention from national issues and enhance the power
of local governments at the expense of the central government. "A
national cable-TV network is a necessity if this country is to survive",
he declared.

Sociologist Arnold Rockman appeared to be of two minds on this subject. On the one hand he maintained that "concensus does not mean that everybody in a social group agrees about everything. It does imply that members of social groups have acquired empathy ... the ability to imagine the role of others, to imagine what it feels like to be somebody else and to do what he does." He was supported in this view by Donald Snowden, who had found that Newfoundland fishermen could relate directly to films about Mexican-American grape workers in California, and vice versa.

But, despite his interpretation of the meaning of concensus, Rockman nevertheless deplored the fact that "our regional and linguistic groups now seem much stronger than our total Canadian identity. At a time when we should have been protectionist, isolationist and high tariff in our national communications policies, we practiced an unmindful doctrine of laissez-faire". And he attacked the mass importation of U.S. television programs as "little more than a subliminal psychic invasion which constitutes a colonial domination in many respects more repressive than the types of imperialism known before the rise of the electronic mass media".

Yet, paradoxically, the increase in the inflow of U.S. television programs had coincided with an increase in Canadian nationalism. It seemed as if the more one knew about someone else the less one liked him. Within Canada itself, "the friction between the two linguistic groups", argued Dale Thomson, "may well be the result of 'good' rather than 'poor' communications." There is great danger, as well as great promise, in the fact that Canadians are being made aware

of one another, in all their diversity, as never before. In Hockman's
terms this danger and/or promise could be understood as a clash between
the "being" values of French-speaking Canada and the "doing-becoming"
values of Anglo-American culture. "French-Canadian society wishes to
have a complete, fully recognised identity among the group of modern
industrial societies (which are largely dominated by Anglo-American
'doing-becoming' and technological-utilitarian empiricism) without
losing its own earlier cultural identity based on 'being' values".

The Trojan Horse

As the seminar progressed, it was pointed out by many people
that participation means more than the ultimate is self-expression.
It is a vital part of the total political process, and far from being
a mechanical act. Ultimately, it depends upon the political will of
a society, and not upon telecommunications. At present, the poor have
no "right" to participate, in the sense of using communications facilities,
although they have the right of access to other public services.

There is a much current talk of "feed-back" from the people to
their government, but the concept is an empty one unless the "right to
be heard" is accompanied by the right to have action taken on the opinions
expressed. Participation, warned Vincent Rose, could be a "Trojan Horse":
governments might indulge in participation to pacify the public, but they
would discover they had taken into the system a force which would
ultimately transform the power structure.

Participation might change politics, agreed Regenstreif,
but not at all in the ways that its supporters fondly imagined. "The
proponents of mass direct participation will (eventually) wish they

had never advocated any such thing", he warned, and touched off
some of the most intense arguments of the Seminar.

In England, for example, a Gallup Poll showed that a
majority of the public favoured re-establishing the death penalty,
although the people's representatives in Parliament continued to
support its abolition. If the will of the public was ignored, what
was the point of asking for it? And if it was always accepted what
was the point of electing leaders to make decisions?

"A supposed new age of participatory democracy is dawning",
commented Regenstreif. But, "mass public can only react. Providing
effective channels for mass participation is simply a useful device to
check on the operation of policy. Innovation is still the responsibility
of elites."

Moreover, new channels would in reality benefit those who
needed them least. "The elderly, the poor, the less-educated, are so
unaccustomed to dealing with government", said Regenstreif, they would
neglect the new opportunities. If free telephone calls to Ottawa were
made available, people who now pay to telephone officials would continue
to call, only much more frequently because of the free service.

Rockman was no adherent to this view. Without access to
all the contemporary communications tools, public participation would
always be limited, he maintained. "No doubt the guilds of medieval
scribes also objected to the pernicious idea that larger numbers of
people should be taught to read and write." He also found it
impossible to agree with Regenstreif's contention that increasing the
flow of information "may serve to narcotize rather than energize the

average listener, viewer, reader. The more time spent listening,
reading and viewing, the less time available for organized action.
And the average citizen can easily mistake the fact that he _knows_
a great deal, with _doing something_ about it."

The debate between these two, the one a sociologist and
the other a political scientist, was never resolved. And after two
days of discussions, the seminar at large was no closer to unanimous
agreement than before the meeting started, although perhaps there was
much greater awareness of the complex nature of the communications
revolution, and its effects on society.

In an attempt at reassurance, Charles Templeton pointed
out that "even those who work at the heart of the industry have no
definitive understanding of its ramifications with society   Yet
many people were aware that there is precious little time left to
discover those ramifications. "The systems for the next 20 years are
already on the drawing boards", warned Don Chisholm of Northern Electric.
For good or ill, those systems will create their own demands, and shape
their own environment, and we will have lost the chance "to create a
benign technology."

At the final plenary session, some participants argued that
what was needed was a moratorium on the introduction of new technologies
--- satellites, video-phones, data banks, home video recorder/playback
machines --- until their environmental effects could be determined,
and appropriate measures taken, if necessary. The proposal found little
support. Instead, many emphasized the need for full scale, inter-

disciplinary research, conducted perhaps by some kind of communications institute, simulating new systems before they were applied and monitoring them once in place. One participant suggested that what was needed was market research to uncover real and latent demands for new communications services.

When the social scientists present were pressed to "tell us what you want so we can design systems to meet those needs", one sociologist explained: "We do not know the answers. We have only just started to ask these questions." This comment drew the tart rejoinder that "you are all no more than liberals terrified by the overwhelming nature of communications technology. You ask on endless series of solemn questions, then you shake your heads and pretend that you don't have enough information to try to reply."

As for a conclusion to all the discussions, that of Dion probably came closest to the consensus of the Seminar: communications, its hardware and its software, "will either be the grave-diggers of our civilization, or the creators of a new one."
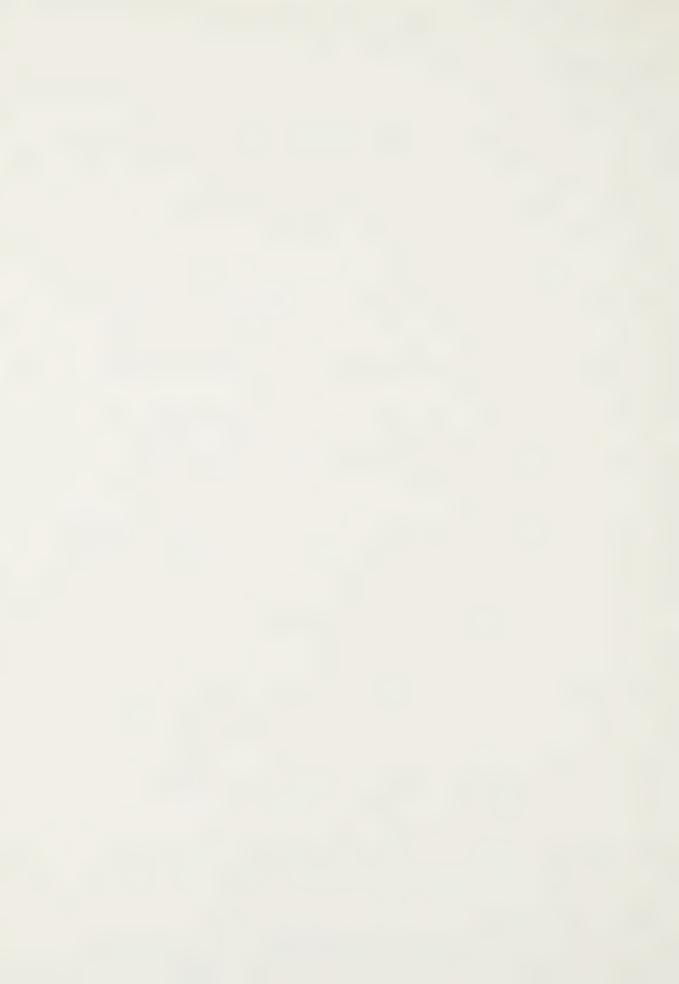
CHAPTER TWO

The Arguments:

The New Technology

To aid those at the Seminar unfamiliar with all the ramifications of the new information technology, three technical background papers were presented. In addition, Kar Liang of the National Film Board gave a multi-media demonstration of the new systems' applications.

Dr. R.A. Mason, IBM Canada. Computers have the capacity to effect "great changes in the manner and degree of participation of individuals in our society — whether in the political process; in planning our social environment; or in enhancing people's creativity in their work and their increasing leisure time."

The great speed with which computers calculate increases "our ability as humans to understand the consequences of proposed courses of action." If large numbers of people are to have access to computerized systems, "the importance of terminal prices ... is paramount." Now available are "video-display consoles, including controller and magnetic tape memory units, which rent for about $40 per month. A portable keyboard-audio terminal costing $26 a month allows a computer equipped with an audio-response device to answer keyed inquiries in English or French. Many other inexpensive terminals are available, including the touch-tone telephone itself. "One speculative direction for the future is direct communication between the individual and the computer from his home telephone. Another future approach would provide neighbourhood centers with perhaps more sophisticated terminals."

A specific example of the use of computers to extend the decision-making process is that of "the simulation of processes and phenomena. By constructing a mathematical representation of a system and having a computer experiment with this 'model' it is possible to predict new phenomena or to uncover facts about the mechanisms of the system which could not be discovered in any other way." The Urban Systems Simulation

Laboratory of the Washington Centre for Metropolitan Studies has
developed a special gaming room for playing the Community Land Use
Game, in which players are intended to learn awareness of inter-
relationships in urban systems.

The concept of computer-calculated referendums is certainly
attractive: "It evokes the possible return to the democratic societies
of ancient Greece." But today's problems are incomparably more complex,
and "our society would be radically altered if all of us had to
continuously consider the detailed problems of controlling our society."
Moreover, a referendum on a single public issue would be a massive
undertaking. Using a central computer able to handle 300 simultaneous
calls from touch-tone telephones, it would take five hours to register
the votes of 100,000 people, many of whom would have to wait two or three
hours to get a connection.

R.J. Latham, Bell Canada Ltd. The telephone is probably the
"major mode" of participation today. It permits two people to "share a
common acoustical space" even though they may be thousands of miles
apart. A telephone subscriber in Canada, or elsewhere, can share this
common space with any of the 214.4 million phone subscribers in the
world.

Among practical examples of participation by telephone are
radio open line programs. In some large cities, Suicide Centres
are accessible by phone. The telephone is also used to access
information contained in recorded announcements, ranging from weather
reports, news and "dial-a-prayer", to university course material. Sir

George Williams University has a system which gives students access
to taped language courses, by telephoning the library.

Further developments include multi-party connections,
mobile phones and the video-phone with a two-way video-screen
$5\frac{1}{2}$ x 5 inches which "should be available in the mid 70s in Canada."
A two-way, broadband, video-link between universities in Boston and
Montreal is being planned and Bell Canada is examining the possibility
of a two-way, audio-visual link between Montreal and Toronto using
a conference room able to hold about nine people in each city.

Teletypewriters use telephone lines, and so do facsimile
transmission machines, of which there are about 500 now operating in
Canada. Entirely new fields are being opened up by the linkage of
computers and telecommunications. As communication increases between
all parts of Canada the bilingual nature of the country becomes increas-
ingly important. "At some future time it will no doubt be possible to
have translation done by automatic means on telephone calls -- say using
computers called in by either party."

Dr. John de Mercado, Department of Communications. The future
"Wired City" will be a city with a total communications system, "where
total is used to imply that the number of services that the system
could provide is limited only by the imagination and pocket-book of the
subscriber" -- and not by the available technology.

This "wired city", using a switched coaxial cable system to
provide a range of audio-visual-data services, might become feasible
within 15 years; a pilot, fully-wired, urban project could be

possible within five to six years. Among services which might be
provided are: facsimile,, meter-reading, shopping from the home;
demand television; computer aided instructions; video-phone; electronic
banking; high-speed communication between subscribers and computers.

The key problem is cost, "which tends to increase exponentially
as a function of the number of services." A prototype wired city network
would cost approximately three times that of the existing, separate,
telephone and cable-TV networks.

The Politics of Participation

Dale C. Thomson, Johns Hopkins University. Communications has
burst through the barriers of the traditional academic disciplines. "It
is inconceivable, for example, to study communications and politics
seriously without some competence in sociology, psychology, linguistics,
mathematics, computer science, anthropology, and some of the natural
sciences including biology, ecology and physics."

"We live in an ubiquitous, elastic and global communications
system ... It is convenient to think of human society as a vast and
intricate network, with countless messages pulsating through it. In
other words, a complex and dynamic process."

"David Easton has conceived a model of the polity as an
input-out system, with interactions both within the society and with
the environment about it. The notion of feedback that he uses has entered
into common parlance. Examined from this point of view, the decision-
making process can be seen as an information flow, with inflow, perception
assessment, recommendation and application as various stages." A
government must be pre-occupied with every stage in this process ---

obtaining the necessary information to make decisions, assessing
that information accurately, assuring the right informational
output, and adequate feedback.

The use a government makes of the communications network
depends on its knowledge of the subject, and also on the political
"colour" of that government. A totalitarian government will try to
control the channels and to direct the information flow. The flow
will likely be largely outward from the center of political power.
A more democratic government will have a larger inflow than outflow
in terms of the quantity of messages. Certainly it will have a
much more complicated network.

"It seems to be a temptation for politicians to try to
control the number and nature of communication channels. Information
Canada is such a case. So is the proposal for a domestic communications
satellite. It is not for nothing that the Canadian and Quebec
governments are fighting for authority over the communications channels."
But although governments can and do affect the communication pattern,
there are "national" limits to their ability to do so.

The challenge to an agency such as the Department of
Communications "is to know how much it can, and should influence the
communications pattern in the national interest." The Department
is bound to be "headed by busy men and my personal concern is that
they will not have the time or facilities to understand the communications
process in Canada. Research is essential, and "I would appeal to the
Minister not to neglect this aspect of his Department's activities.
Communications is a new field of research, and much remains to be

discovered about it. Many of the questions ... remain unexplored. In fact many of the questions remain unasked."

New communications systems transform the social and political environment about them, leading to "social and political unrest, social and political mobilization." Faced with such a situation, the wise political leader rushes to modernize the communications system, and to see that its channels extend to every sector of the national community. The wise democratic leader will try to ensure that the communications flow is in both directions."

"It is tempting to apply these general observations to the current political scene in Canada, and with special reference to Quebec. That is a first class subject for research ... (and) a fruitful one for Canadians."

Peter Regenstreif, Rochester University. "A supposed new age of participatory democracy is dawning ...(a) political Age of Aquarius." There is no doubt that the media technology—television, radio, print, telephone, computers—can permit greater participation in decision-making and greater contact between leaders and public. However, "there are considerable grounds for doubting whether even with the full development of the new technology, the role of the public will be that different from what it is today."

A clear distinction should be made between the availability of new technology and its actual use. Government departments have made almost no use of existing survey research methods which, though expensive, are "ultimately nowhere near as expensive as not knowing the information obtained through such techniques." Members of Parl-

iament still refuse to allow proceedings in the House of Commons to be televised. "No special provisions have been made—nor scarcely have they been suggested—for providing Canadians free phones to their MP; even the mails are not fully used." Few Canadians know that they are entitled to free mailing privileges when writing to their government in Ottawa.

The new technology is expensive, and that limits its use. It is also complicated, and that serves as a further restriction. "Direct phone links to government require specialized directions for their use, and this would automatically reduce the number of people able to use them. If the calls were recorded by some computerized device, the only gain would be in the relative ease with which the original and subsequent calls from the public could be made in contrast to writing. Anyway, the odds are that bureaucracies cannot function without writing."

Regenstreif's doubts about the number of people who would take advantage of new channels for participation were recorded in Chapter One, and so were his suspicions that the result of participation in public issues might be quite the opposite of what many advocates of mass involvement expect.

Because of his belief that "one of the strongest underpinnings of a political system is some sense of political community", Regenstreif said "it is possible still to be wary of proliferating channels of communication." They may meet "individualistic criteria but they also counter a need in society for common experience."

"A related problem area is something Paul Lazarfeld and
Robert Merton termed 'Narcotizing Dysfunction'", which again was
described in Chapter One. "I believe this is what has happened here
in Montreal among English-Canadians in connection with the problem
of relations with French-Canadians."

In conclusion, "I do not regard increased public participation
as a panacea." It cannot be assumed that the use of various technologies,
like the phone, television, and survey research, will necessarily result
in better participation. New channels will, however, give the public
a chance to react to policies initiated, as always, by small, powerful
groups.

Prof. Léon Dion, Laval University. "Telecommunications
comprise only an aspect, and perhaps a secondary aspect, of communications.
The most remarkable consequence of the 'communications revolution' of the
past fifty years has been, not the substitution of the traditional—
interpersonal—style of communications but the addition to it of
telecommunications, which thereby has incomparably increased the weight
of the former type of communications."

Professor Dion's analysis of the different kinds of part-
icipation was reported in Chapter One. Telecommunications must be made
to serve "participation through commitment", and for this to happen,
the "scandalous under-exploitation" of the social possibilities of
telecommunications needs urgent attention. "The real question is
whether liberal societies are prepared to convert the media of
communications into essential, socio-political instruments."

Of all the factors contributing to change during the past century, the advent of the telemedia has probably been the most powerful in transforming the traditional universe of man. "The notions of distance, of geographic space, of social and psychological norms have acquired new meanings ....It is probable that as a result of this new environment even the foundations of personality will undergo profound mutations."

As described in Chapter One, Professor Dion felt that telecommunications accentuate the power of government in a democracy, and "it is far from certain that steps such as televising parliamentary debates or legal proceedings would re-establish a certain equilibrium." Powerful as they are, the telemedia affect different segments of the population in different ways. For old people, television seems to be mainly "a soporific", which shortens the time spent waiting for death. For the young, on the other hand, "the telemedia represent a veritable school"; records, radio and television are as natural a form of education as the family and the school were for preceding generations.

The gap between young and old in the modern world does not imply a "conflict of generations. It is first of all attributable to the fact that a new humanism, if not a new humanity, which supercedes all traditional values, is in the process of being born."

The phenomenon of dissent appears to be attributable in large measure to telecommunications, "to the extent that they incite and crystalize a revolution of rising frustrations - a possible prelude to a political revolution which could create a new civilization."

Our social responsibility is so great that "all countries and the United Nations itself" should immediately decree the entire field of communications to be a "problem of global proportions." If we do not "resolve the crisis of humanism created in large measure by the telemedia, all our efforts will be without purpose and all our discussions will be idle verbiage."

The Social Implications of Participation

Arnold Rockman, York University. As described in Chapter One, Rockman defined participation as the sending of messages through society's communications networks, and expressed concerned about the message senders.

"Since the mass media are organized like industries", people who appear on radio or television, or put data into a computer network, are expected to have certain professional qualifications - unlike the people who merely "receive" messages. Even higher qualifications are required of those individuals who "organize" the message output.

Message senders and organizers are essentially middle-class people, propagating a middle-class style of life. "Large numbers of people who might organize or send interesting and important messages into media networks never get a chance to do so."

The identity of those who organize or send messages is particularly important in the case of our mass media which Rockman said are largely filled with American-produced programs reflecting American middle-class values. "The media situation in Canada at present is little more than a subliminal psychic invasion ....

The new imperialism works through _Bonanza_ and soft drink commercials,
through situation comedies, through melodramas, through space operas,
all of which are so skillfully devised (in a technical sense) that
hardly any governments realize what the total effects on their
societies are likely to be in the next 50 years."

Rockman's concern for our Canadian identity was described in
Chapter One. "Given the present situation of Canadian mass media it is
often far easier for many Canadians to generate empathy for people in
the US or in Nigeria."

Violent acts are often the media of communication chosen by
people who feel all other legitimate channels have been blocked. "It is
an arguable thesis that most anglophones in Canada paid little attention
to French Canadian claims for recognition of their full identity until
the bomb exploded in the Montreal mail box. "Before that happened, how
often were French-Canadians seen and heard on English-Canadian radio and
television? And when they did appear were they presented as equals, or
as "charming holdouts of a bygone rural tradition?."

With this background, certain specific proposals can be made:

a) "In a 'doing-becoming' society such as ours, strong
personal identities are developed through action and
through a sense of increasingly effective 'reach' ...We
have hardly begun to consider the possibilities of a
society in which more and more people, regardless of
income, age, class and other social variables, are
able to discover their individuality and personal identity
through free exploration of the symbolic environment."

Experimental projects could include putting very
young children in charge of remote-controlled cameras
and switching devices for the selection of broadcast
images. Or children could be allowed to "edit their
own newspaper through the use of computer-controlled
typewriters, screens and loudspeakers in a game-playing
situation."

b) We are used to the idea of living in a "liberal society"
in which most people can read and write. But "electronic
literacy", or the ability to 'read' images and sound is
now widespread; most people should learn to 'write'
electronically as well. "Why not establish a 'citizens'
band" of television studios across the country, where
anyone may present or produce his own videotape program
for subsequent broadcast, locally or nationally? Remote
control studios might be necessary for economic reasons.

c) "As cities continue to sprawl across outdated political
boundaries ...we may need creative experiment and research
in the use of broadcast media organizations for the
development of community loyalty, participation and social
organization at the neighbourhood and district level...
which might help to counteract growing feelings of
isolation and political powerlessness now everywhere
experienced in industrial urban mass societies."

d) We ought to consider these possibilities if we want a
'nation of producers', of message-senders, a society

in which maximum individuality of expression is
encouraged. "We may need a federal government-
sponsored communications research institute which
would be action research-oriented along these lines."

e) The current method of financing the media needs
radical revision. One possibility would be a
"tax on all advertising messages, no matter in
what medium they appear."

"The political and social implications of these proposals
(may) lead to a widespread decentralization of power (and) a nation
composed of equals and potential equals in full communication with
one another across the whole land."

Donald Snowden, Memorial University. "Society makes
tragically poor use of the human resources available to it." Much
indifference, hostility, abrasion and polarization exist "because they
do not appear to be adequate opportunities for citizens to participate
meaningfully in decisions which affect their lives."

"Those decisions concern how and where people live."
Frightening evidence exists that centralization has become the standard
by which "the dimension of life in Canada is measured." But this
standard "is not compatible with the retention of values and traditions
which are still meaningful and important to many Canadians who live
outside the centers of influence in this country."

Participation by rural people is not necessarily more urgent
than that by city dwellers. Yet "rural people are convinced that they

are more remote from centres of influence, from centers of communication, decision-making and manipulation. They feel that expensive development and remedial programs for rural Canada are being implemented on their behalf, without any opportunity for their "meaningful participation" in the planning process.

The tools are now available to make participation a reality. "But it is one of the anomalies of Canadian life that what the Department of Communications regards as tools for participation may very well be regarded as nuisance by other agencies who recommend policies and formulate and administer programs for Canadians. Their record in seeking or giving the appearance of welcoming participation is not formidable."

Film is one of the tools of communication which has been used to encourage citizen participation. It was first used in a joint program by the National Film Board and Memorial University, on Fogo Island, a small and economically-depressed island with some 4,000 inhabitants. "The technique involves filming an interview of the community, as it sees itself, (centering) around personalities and not around issues, ...Every individual on film has first editing rights and can in fact refuse to allow all or any of the film to be used after he views it". The completed films are then shown throughout the community, and after approval known they are screened elsewhere, in particular "to those in positions of power."

On a number of occasions, these films appear to have helped cause positive action both from outside the community and from within, because they reveal points of common concern, and frequently

the first steps towards solution. One practical result, on Fogo
Island, has been the creation of the first co-operative ship
building yard in the province.

A somewhat similar project, using video-tape, took place
in Alaska. Before the introduction of rural development legislation,
video-tapes describing the proposed laws were shown to rural, isolated
communities. Subsequent discussions of the proposals were in turn
video-taped and viewed by the legislators. As a further extension of
this approach, a proposal has been made to equip each of 200 Alaskan
villages with video-tape equipment so that citizens can make and
exchange their own programs, for educational purposes.

The experiments in Alaska should be introduced to the
Canadian north, which suffers from the same "debilitating effect of
lack of communications." But "participation means nothing if those
who participate are not well equipped to do so", and to date "there
has been appallingly little effort by governments to equip their
citizens to work in fruitful partnership with the policymakers,
planners and technocrats."

Vincent Ross, Quebec Department of Education. Tevec was a
48-week, Quebec government experiment in audio-visual education.
Initiated in June, 1968, its main objective was to teach certain main
subjects, up to the ninth grade, to the adult population of
Lac Saint Jean. At the same time, the program was designed to
"stimulate the adult population to take part in the changes in social
development and to sentitize it to the realities of modern life."
In short, Tevec aimed "to transform attitudes and loosen the spirit."

Tévec offered daily and weekly television programs. It also provided the necessary background material. "punch-a-card" computer cards were used for testing responses to questions and also for research purposes. In addition, regional and local consultative committees for "animation and participation" were formed. Tele-clubs were organised to hold discussions following the weekly programs, and revision Centres were set up, where individuals could make personal contact with teachers.

"Participation is not an effect produced mechanically" by communicating with a previously inert public. "On the contrary, it occurs as an active element at the very moment of message reception and selective exposure to the media ...." A communications organisation which intends to educate a heterogeneous public in a specific region must first of all mobilize the public, that is incite it to modify its routine activities sufficiently to enable the public to integrate itself into the new activity."

To mobilize the public in Saguenay-Lac Saint Jean, a public campaign using radio and TV was undertaken before the first educational broadcast. This procedure demonstrated the "two-step" nature of communications. The publicity itself "did not directly seduce adults into registering with Tévec. On the contrary, the decision whether or not to register was made after an 'informal' process of consultation, discussion and negotiation with all those people in the students immediate circle "who felt deeply involved in the merits of his decision or its possible consequences." In this process, "the socio-metric leaders (or Opinion leaders) seemed to play any.

mediating roles. This "two-step" operation continued through the
Tévec experiment, with those following the course relying upon
friends and neighbours for advice and encouragement to continue."

A number of conclusions can be drawn from the success
of Tévec and from the general experience gained:

1) "It is important to explore further all aspects of
the process of mobilizing various publics: tele-
communications, decentralized organization,
amplification and censorship within the immediate
social milieu .... etc."

2) Multi-media systems incorporating a feedback process
appear to have certain advantages in mobilizing and
maintaining public participation in "serious"
programming. For possible future application,
researchers should examine the implications of
feedback patterns that are more or less "instantaneous"
or "deferred."

3) A program such as Tévec involves changes in the daily
routine of those participating in the courses, since
the programs were seen very early in the morning or
very late in the evening. "It is important that
research programs be undertaken to better understand
the nature and degree of the changes in daily routine
required."

4) "It will be necessary to undertake follow-up
research to determine, quantitatively and qualitatively,

the long-term effect of participation
stimulated by multi-media systems, and in
particular its implications for broader socio-
cultural and political processes."

Participation through the Mass Media

Soucy Gagné, Sorecom. The question is no longer whether
participation is a good thing or not, but how to invent ways to
make it more effective.

"If I adhere to the notion of enabling more groups and
individuals to participate in community affairs by means of the mass
media then, on the other hand, I place enough confidence in human
beings to believe that they will use the media in a functional manner,
and on the other hand I believe in the worth of the action of the
mass media (as instruments of initiation, of reinforcement, of change,
and even of catharsis); at the same time I am convinced that the
mass media have been, far more than is necessary, under the control of a
small minority who have used them to reinforce their privileged
positions."

While it is a fact that more people than ever before are
expressing their opinions through the mass media, this participation
"takes place within a structure which does not search for participation
as a democratic end in itself. Because television and radio stations
operate on a commercial basis "they have had to invent a certain type
of participation." A long list could be compiled of people who have
been denied the right to express themselves through the mass media.
In effect, "it is necessary to have money to exercise one's right of
expression, one's right to be heard."

The increasing number of cable-TV systems will give various groups a better chance to express themselves on subjects of their choice. Small program production centres will encourage the development of local identity "in such a way as to increase the opportunities for a more intense participation in all its forms at the regional level."

"The co-ordinated exploitation of technical systems such as the telephone, radio, television and computers will bring a new dimension to the possibilities of participation, not only for small groups but for all the community." During a televised debate on a public issue, a representative sample of the population could take part in a computerized referendum, creating a wider participation, and contributing greatly to the quality of public debate.

The growth of citizen participation and increasingly easy access to telecommunications equipment are both inevitable. But we should be making preparations for the future. "It seems obvious to me that education and broadcasting techniques are so interdependent that we shall soon have to find coherent methods for progressively introducing these media into the entire learning process."

John Craine, Canadian Broadcasting Corporation. Broadcasting is moving into an era of "technical affluence". Audiences are being fragmented, and "the concept of mass audience will have to be redefined."

The growth of CATV systems is causing changes in television which have already occurred in radio. Listeners in Los Angeles now

have a choice of 108 stations and New Yorkers have 63. "Radio
programmers have all but abandoned the attempt to be all things
to all men and have instead sought to identify a specific area
of interest that is sizeable enough to attract a viable minority",
a pattern which resembles the increasing specialization of
magazines.

"Since most people believe that a wide range of alter-
natives contributes to the quality of life, we can look forward to
a further extension of this trend." But perhaps "we lose something
in the process. In the world of one-station-for-one-listener, do
we reduce the feeling of community which can come from the shared
experience?"

Radio has also led television into the era of two-way
communication. About 100 Canadian radio stations operate introducing
shows. While the quality varies widely, there is no doubt that these
programs have given the average listener a two-way form of communi-
cations unlike any other so far invented. "In situations where
literacy is a problem, the Phone-In show offers perhaps the only
effective means of expression to thousands of people who simply could
not compose a letter".

Yet, open-line shows have their limitations: "most have
been generated at the community level and seem most effective in
dealing with local issues, such as berating the Town Council for poor
snow removal. It remains to be seen if this form of broadcasting can
offer the listener participation in broader issues."

An even more exciting development is that of "do-it-yourself radio". At Pond Inlet on Baffin Island the local Eskimo community runs its own programs on an old 20-watt transmitter given them by the CBC. Last winter a group of young Ojibway people in northwestern Ontario started a project called Kenomadiwin, using radio as a means of community development. More and more Canadian universities run their own student radio stations, on low-power or closed-circuit. In big city ghettos in the United States, local groups are set up with small transmitters in abandoned store-fronts, broadcasting within their own block, with encouragement by the Corporation for Public Broadcasting.

"We must begin to train a new breed of activist listeners ... Young people in the school system should be taught the simple technicalities of making their views known in the mass media. Above all they should be educated to criticise. Given basic information about broadcasting ─── its limits, its capabilities ─── they should be trained to demand only the best that it can produce."

Charles Templeton CTV Ltd. "Of the major technologies television is the youngest; it may also be the most consequential. For good or ill,.. it directly touches more lives than any single invention man has devised." Yet almost nothing is known about its social effects.

"The industry is in a state of flux, and the forces influencing both technology and programming are greater than at any time since its inception...automated recording and playback equipment

in the home will make possible an electronic library with all the advantages of constant availability. World-wide, universal colour and scanning line standardisation are inevitable. Three dimensional, wallsize receiving sets are no longer mere science-fiction imaginings. "CATV will become virtually a utility, improving picture reception, proliferating the number of available channels, intensifying local programming and increasing the participation of the general public in broadcasting." There can be little doubt that a "third network", a CATV consortium, will develop in Canada.

"Actuality programming will increase enormously. Television cameras will be able to go wherever man can go." The long-delayed great leap forward in educational television will provide enrichment programming as well as instruction. It will help replace "the creativity and satisfaction" which the average man previously derived from his work. There will be an increase in "escape" programming, which helps "to relieve accumulated tension", and also a larger role for news, informational and public affairs television.

A new kind of programming will emerge through the growth of cable television. Events and individuals not presently covered by public or commercial television "will become daily program fare for minority audiences." Whenever cable operators have sought their co-operation, "educational, political, ethnic, theatrical and service organizations have demonstrated an immediate readiness to commit themselves to participate in planning and in actual programming."

CHAPTER THREE

Conclusions

As the first in the series, the Montreal seminar at times wandered away from its objectives into polemic and dialetic. Nevertheless, several clear-cut themes emerged.

This is the "age of communications". The combination of media and information technology is challenging inherited values, institutions and power structures, and may even alter "the foundations of personality." The phenomenon of participation, or the desire by larger and larger numbers of citizens to participate in the making of decisions which affect their lives, is one of the principal products of this explosive and largely untrammeled force. It has been caused both by the "revolution of rising frustrations" and by the incomparably greater opportunities for direct participation created by the new technology.

At the same time, participation is no instant panacea. It may even be a liberal, middle-class notion foisted upon the entire nation. Too much participation could lead to a collapse of consensus, with everybody "connected in isolation" while busily doing their own thing.

As technology fragments the media, more attention can be paid to specialized audiences. This process is already taking place in radio and will, through cable systems, take place in television. Local and community identity will be reinforced, and as a result the region will grow in power in relation to the Canadian federal government. To

some participants this seemed a problem, but others
emphasized the need for regional distinctions.

Data banks and demand television and EVR-type home
video machines may be the ultimate in individual media. But
citizens must also be able to participate creatively. As one
workshop report put it: "What we should be working towards is a
situation in which the right to send a message via the media, as
opposed to simply having the right to receive a message, is accepted
as a legal right."

This leads to the concept of "a nation of producers," as
several participants called it. Specific suggestions included do-it-
yourself radio stations manned by community groups and a "citizens
band" chain of TV studios where any individual could record messages
for broadcast.

The key to effective participation is know-how; without it,
the media will remain the preserve of an elite. Technology should be
"de-mystified" and the public instructed in its use. If it is correct
that "the civilization of the book is dying before our eyes", or at
any rate declining and making way for a possible new audio-visual
civilization, then literacy may have to be re-defined as the ability
to read and write, in sound or in moving images.

Before ringing in all the marvels of the new technology,
full use should be made of the instruments we already have, including
such homely services as the mails, which citizens can use without
charge when communicating with their government. Instead of designing

systems for computer referenda government should use the already available techniques of social science research. And rather than encouraging mass participation, one workshop suggested "use the channels we already have—the political parties—and give members access to all the information technology."

The need for more research was a recurrent theme in most workshop discussions. Multi-disciplinary research, involving a full partnership of social and natural sciences, was taken for granted as the only meaningful approach. Several participants advocated the creation of some type of research center or institute. There were few specific proposals for research projects, apart from a suggested study of attitude changes brought about by the media, and by radio hot-line shows in particular.

Two more or less random comments can serve as conclusions.

One participant proposed: "The Department of Communications should fire half its engineers and hire social scientists instead."

Another participant tried to get a sociologist to provide specific answers to his question "what social objectives should we technicians aim for", and when none were forthcoming, observed: "If you don't tell the systems designer now what's needed, 15 years from now you'll blame him—and then it'll be too late for him, or you, to do anything about it."

Seminar Chairman: R. Gwyn, Department of Communications

Guest Speaker: Alan Westin, Columbia University

Plenary Session Chairman: G. Beaugrand-Champagne

Panellists:

    1. Technical Briefing

        G. Bergeron, Department of Communications (Chairman)
        R. Latham, TCTS*
        K. Liang, National Film Board
        R. Mason, IBM Canada*
        J. de Mercado, Department of Communications*

    2. Politics of Participation

        D. Thomson, Johns Hopkins University (Chairman)*
        Léon Dion, Laval University*
        R. Faibish, Bushnell TV*
        P. Regenstreif, Rochester University*

    3. Social Processes of Participation

        G. Beaugrand-Champagne (Chairman)
        A. Rockman, York University*
        Vincent Ross, Ministere de l'Education, Quebec*
        Don Snowden, Memorial University*

    4. Participation through the Mass Media

        A. Ouimet, Telesat Canada (Chairman)
        J. Craine, CBC*
        Soucy Gagné, Sorécom*
        C. Templeton, CTV*

    5. Techniques for Creative Participation

        J. Cloutier, The University of Montreal (Chairman)
        A. Rockman York University
        Louis Martin (animateur)

Workshop Chairman: Alex Murray, York University; R. Monpetit, NRC;
                     D. Hilton, de Montigny Marchand,
                     Department of Communications.

*   Position paper available on request.

TERMS OF REFERENCE

To examine the ways by which telecommunications technology
and systems can be used to increase participation by individuals
and groups, both in the sense of making a contribution to decision
making and as a means for creative self-expression.

TELECOMMISSION

REPORT OF THE SEMINAR

ON

ACCESS TO INFORMATION

HOW TO KNOW AND BE KNOWN

co-sponsored by

The Department of Communications

and

The Department of Regional and Economic Expansion

Carleton University

Ottawa

on

May 15 to 17, 1970

This is a Report on the Seminar and does not necessarily represent the views of the Department or of the federal Government. No commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.

CONTENTS

INTRODUCTION

How can telecommunications technology be used "to approach the ideal of the optimum amount of information being made available to the maximum number of individuals, groups and institutions?" What are the "economic and social benefits of doing so and the economic and social costs of failing to do so?"

These were the terms of reference of the Seminar on Access to Information held at Carleton University in Ottawa May 15 - 17, and co-sponsored by the Departments of Communications and Regional Economic Expansion, as part of the Telecommunications Environment Section of the Telecommission.

As the 90-odd participants soon found out -- and they included businessmen, engineers, computer scientists, social scientists, social workers, economists, lawyers and educators -- the terms of reference were a good deal broader than they appeared at first glance. The operative word was optimum, not maximum. Maximum information, some delegates warned, might bring more harm than good: social damage, in the case of minority cultures inundated by the values and images of the majority groups who control information systems; psychic damage, when an individual is subjected to an over-whelming barrage of information - packed messages.

The Seminar itself was organized around five panels: Technology, which covered all aspects of telecommunications from data processing and broadcasting to telephony; Social Aspects; Business Aspects; Information Overload, and Data Banks and the Public Interest.

Most panelists submitted position papers in advance. Each panel discussion was followed by a question period, and then the company divided into multi-disciplinary workshops. The Seminar closed with a plenary session where the report of each workshop was presented, and its recommendations discussed.

This report is divided into three chapters, the first of which presents an overall picture of the Seminar. Chapter Two contains a summary of the position papers, and Chapter Three records the conclusions of the meeting.

As in other seminars of the series, the nature of the topic provoked a confrontation between "technologists" and "humanists", with the sociologists as particularly vocal members of the latter group. Feelings reached the point where one distinguished scientist declared himself "sick and tired of being made to feel the villain for all the world's troubles." Businessmen also found themselves the target for criticism, to which they responded at times in exasperation, at times in anger.

And yet the confrontation appeared to take place less on ideological grounds than on those of intellectual style and approach. One group tended to ask: "What are the right answers?" The other: "What are the right questions?" The Seminar never found an effective balance between the two positions, but by identifying them, it did perhaps begin the painful process of developing a synthesis. After all, in both cases the operative word is right.

If few precise, orderly recommendations came out of the often heated discussions, they were not expected. The end result was what the organizers of the Seminar anticipated: a number of broad concepts for directing telecommunications technology in the interests of society, together with some specific suggestions on how government and industry might translate these ideas into action. It must be noted, too, that some proposals were so extravagant that one businessman was moved to comment: "If we remove all considerations of cost then of course technology can achieve anything you want it to." Even so, many people present would not have shared his confidence.

Chapter One

Alternatives to Anarchy

"The first thing which strikes me" declared Laval sociologist Jacques de Guise "is the anarchic nature of technological development. New inventions follow one another in geometric progression...but their growth has almost never been planned or guided by human values or goals which were considered socially desirable."

Astonishingly few participants - considering the wide variety of their backgrounds and interests - challenged the thesis of de Guise's position paper. In his terms, technology responds to the "iron laws" of technical innovation and commercial profit - neither of which have much connection with human values or social goals. But how can society define these values with such precision that they may become clear-cut objectives for technological progress? What is really meant by such worthy generalizations as "equality" and "freedom" in the context of communications? Is access to information a want, a need or a right? And what are the minimum information needs within our society? These essential questions proved very hard, if not impossible, to answer.

But while participants wrestled with the problem of defining social goals, de Guise's basic contention received ample support from his fellow sociologists.

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1 cf. De Sola Price, <u>Science Since Babylon</u>, Yale University Press, 1961

"I am extremely concerned", said Thomas McPhail of Loyola University, "that technological needs have, by default, taken pre- cedence over the quality and substance of human life".

Another sociologist, Benjamin Singer of the University of Western Ontario, argued that, "under the assumption that the market place responds to human needs rather than creating them, and that the technological process also fills needs in the most rational manner, we have made man fit into our communication technology rather than the other way around."

In most societies, said Singer, there are three types of communication channels: "inter-personal channels" involving direct man to man conversation; "inter-personal channels depending upon some form of technology", or man to man conversation by means of a machine such as the telephone; and "mass channels" in which the information flow is one way, and from machine to man.

"I would argue", said Singer, "that technology has engen- dered an overdevelopment of mass channels", which are the least satisfactory means of communication. And in particular, "the elec- tronic media have generated problems of an individual and collective nature--pathologies--while contributing too little to the needs of individuals who exist in a state of very rapid social change."

Another phenomenon caused by unplanned technological growth was that of "information starvation", described by Diana Ironside of the Ontario Institute for Studies in Education: "While there is an information glut for some of us, a state of information starvation exists in our society for those with the least power".

This condition, said Miss Ironside, "appears as a phenomenon of critical dimensions to numbers of educators, community development workers, and other proponents of change in society. Libraries by and large are seen as middle-class institutions with an over-whelming bias toward the print medium.....Schools, government and community institutions, traditionally the purveyors of information, increasingly attend to unplugging their own strangled communications channels. The citizen's right to information has been eroded."

These speakers all argued that the incredible explosion of information technology over the past few decades has in fact brought very little improvement to the effective flow of relevant information through the political and social order. It has not improved the average citizen's access to information. Using the telephone as a case in point, Singer referred to a study conducted by his students in London, Ontario. It showed that "while, technically, the linkage of person to person was possible through the telephone, in a majority of cases they were not able to reach their objectives, usually significant officials in government, industry and community organizations."

Widening the Gap

In his opening remarks, the Seminar Chairman quoted the keynote speaker at an earlier Seminar as saying that "information technology, by its nature, reinforces the powerful"[1], and observed that this was in effect a challenge to the basic premise of the present Seminar: that access to information could be increased by proper use of telecommunications technology.

(1) Alan Westin of Columbia University, at the Seminar on "Telecommunications and Participation".

Several speakers gave examples of how telecommunications was in fact increasing social disparities, instead of reducing them. Jacques de Guise argued that while a telephone in Rimouski cost as much as a telephone in Montreal it was markedly less valuable, since the Montreal subscriber could make toll-free calls to at least 200 times as many subscribers as his counterpart in Rimouski. And the Montrealer is "connected to a network of more important subscribers." The same disparities exist said de Guise, in the case of television: "people in the hinterlands are paying directly (through taxes) or indirectly (through buying advertised goods) for broadcasts which they cannot receive".

A further aspect of inequality was raised by Duke Redbird. "The information flow", he said, "has an ethnic character which is not necessarily that of all who receive it". Information systems are dominated by the value-systems of the English and French-speaking middle class, although Indians and many other Canadians do not subscribe to them.

The social utility of television, that most pervasive of all telecommunication information systems, was questioned on at least two grounds. Singer observed that "it is a well-established cliche of mass society theorists that the mass media generate passivity or apathy", despite McLuhan's view that television generates partici-pation. According to Singer, there is truth in both statements. But at present "we are in the middle of an information explosion which leads to an information overload in modern man; bombarded by ever-increasing rates of message transmission, he becomes fragmented and

disoriented. Nothing seems real or permanent, everything is transient
.....Images, character, style, even his own identity are part of this
sense of transience, breeding ever more insecurity."

Television-viewing may hamper active participation in another
sense. As one workshop discussion noted, "television does provide
an access channel to information, but by blocking out time which might
have been otherwise spent on more productive uses, it could also be
'counter-informative'."

All these criticisms related largely to the unintended, acci-
dental social consequences of information technology. But in a controlled
situation, such as can be created in the business world, surely
telecommunications can serve precisely defined needs. According to
several businessmen at the Seminar, they could, but they often do not.

Mike Lucas of L&W Data Systems of Toronto remarked that many
computerized information systems are build to suit the ideas of the
designer of the system rather than the needs of the users--that is,
they are technically-oriented rather than user-oriented. And he
quoted a statement by one (unidentified) authority: "The information
retrieval field has been plagued for many years by busy people
spending large sums of money designing, or attempting to design,
phantom systems for non-existent people in hypothetical situations
with unknown needs."

"More information is being asked for by management than it
can or knows how to use", said John Sealy of Sampson, Belair, Riddel,
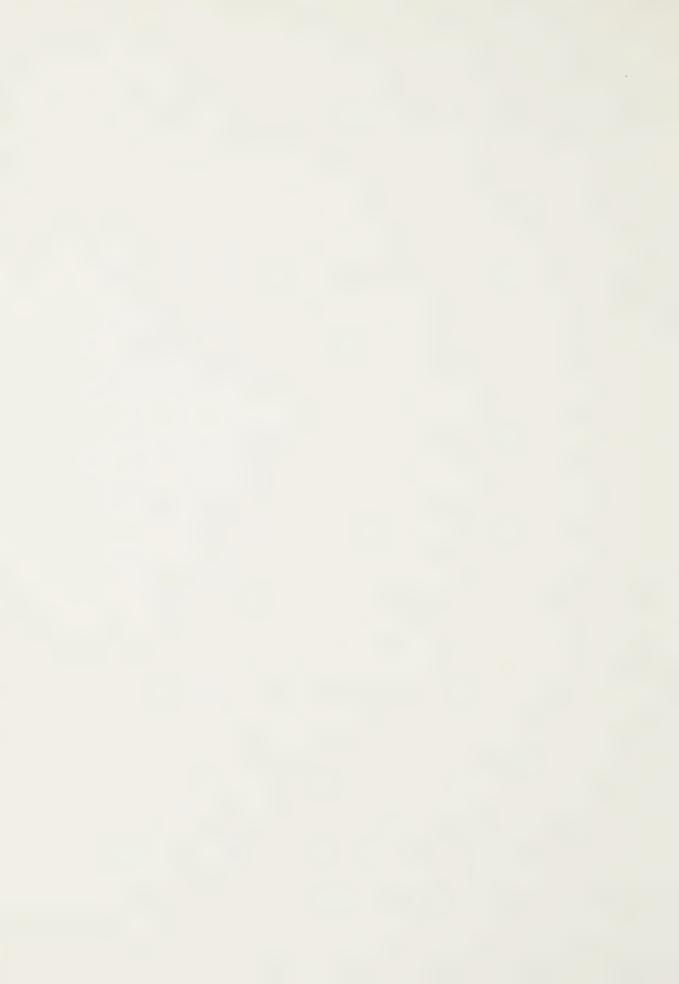Stead, management consultants. "This demand is erroneously equated

with an improvement in the calibre of management...There is a lack
in business of good yardsticks to measure performance, including the
worth of information. Business is better at measuring costs than
the value of information."

The Issue is Alternatives

As the Seminar progressed, it became evident that many
criticisms were aimed, not at telecommunications technology but at
the ways in which it had been applied. If some speakers criticized
the failures of communications systems, others -- and indeed the
critics themselves -- were excited by the opportunities which these
same systems created.

"The issue is alternatives, giving people a choice, a real
choice instead of a mass media choice, of alternative ideas, opinions,
information, from which they can choose." This statement came from
David Hughes, organizer of a citizens' group, Town Talk, in
Thunder Bay, Ontario, and the man responsible for introducing the
word 'alternatives' to the Seminar. Like de Guise's concept of
technological "anarchy", "alternatives" became a theme-word in
discussions.

"The problem we face is the total lack of alternatives,
in a one-industry, and for practical purposes one-media town", said
Hughes. To create these alternatives, "we realize that the citizens
must have unhindered, direct access to the media, especially to
cable television." The cable system in Thunder Bay reaches 84 per
cent of all households, he explained, and the citizens' group wanted
unhindered use of one of the cable channels--for "a platform where

anything can happen." Among the things about to happen was Town
Talk, a public affairs program. "We already have the Public
Library budgeting for terminals for remote use as information
centers.....they're going to set up cameras in the lounges; people
would walk in and say their piece before the cameras; these would be
recorded back at the program cen'er and strung together as programs
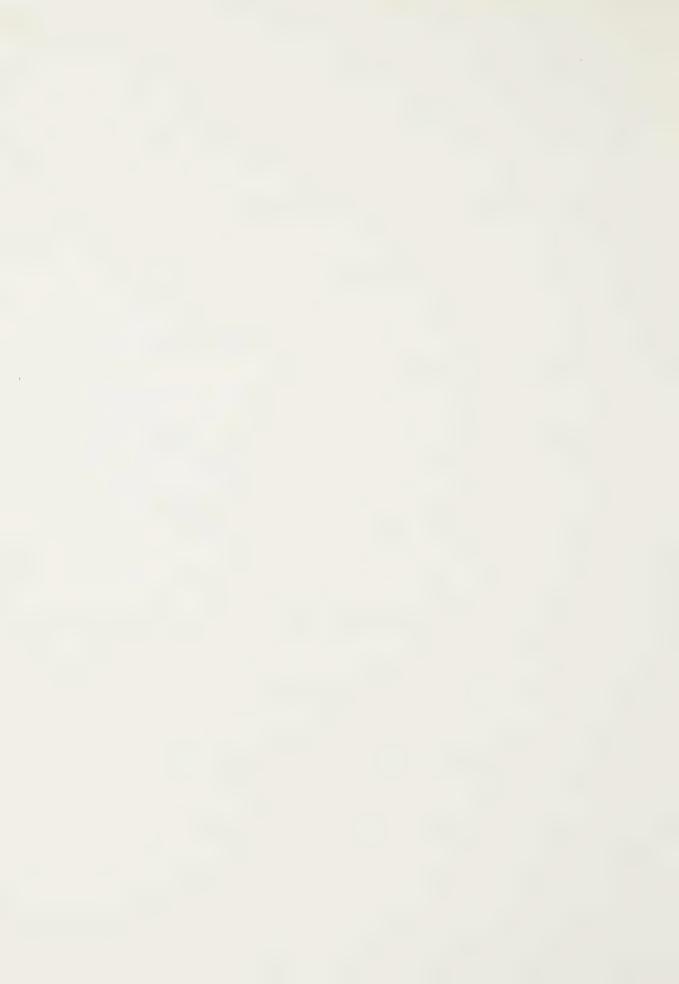on different subjects." And the result: "People would literally
create their own programmes. We don't know what will happen, but
we'll have an environment that reflects reality, instead of reality
filtered through the mass media."

People as programmers, instead of objects to be programmed
at. This was the essence of the Thunder Bay project. Another way of
extending information alternatives, this time by bringing the outside
world to an isolated community, was described by Duane Starcher,
Director of Educational Television at Memorial University,
Newfoundland.

In a recent experiment, video tapes were mailed out to six
small communities in rural Newfoundland and Labrador, so that adults
could take a third-year university credit course on "The Psychology
of Learning." After an attempted telephone hook-up between the
students and the university failed because of technical difficulties,
student questions were recorded on audio tape and sent to the uni-
versity , where the professor's replies were taped, and mailed back in
return.

"This was an interim solution--of course we'd like to offer live television courses--in a part of the country where interim solutions are the only kind of solutions we'll be able to afford for a long, long time." And it worked: the adult students in the outports passed the course with average marks as high as students taking the same course at the university. In the 1970-71 academic year, the program would be extended to 13 communities.

Broadcasting without Commercials

Broadcasting is one area of telecommunications where regional inequalities are most pronounced. The uneven spread of cable systems along border areas and into large cities tends to accentuate these inequalities, several participants argued. A possible solution was offered by Broadcaster Stuart Griffiths of Bushnell Communications Ltd., in the form of a coast-to-coast 25-channel cable system, able to provide an enormous range of programming alternatives. It could be financed entirely by subscription fees, of between $150-200 a year (compared to about $60 a year at present for cable-tv subscribers). "This represents our last chance to create a television system free of dependence upon advertising."

A national cable system, said Griffiths, would "have the effect of equalizing the broadcasting services offered to Canadians .....(and) would accelerate the development of additional Canadian programming production facilities and creative personnel." But while all this could happen in the immediate future, Griffiths observed:

"radical change is usually resisted by those subject to the change.
The next decade of Canadian broadcasting will probably be no
exception." Some present day broadcasters "still look at cable
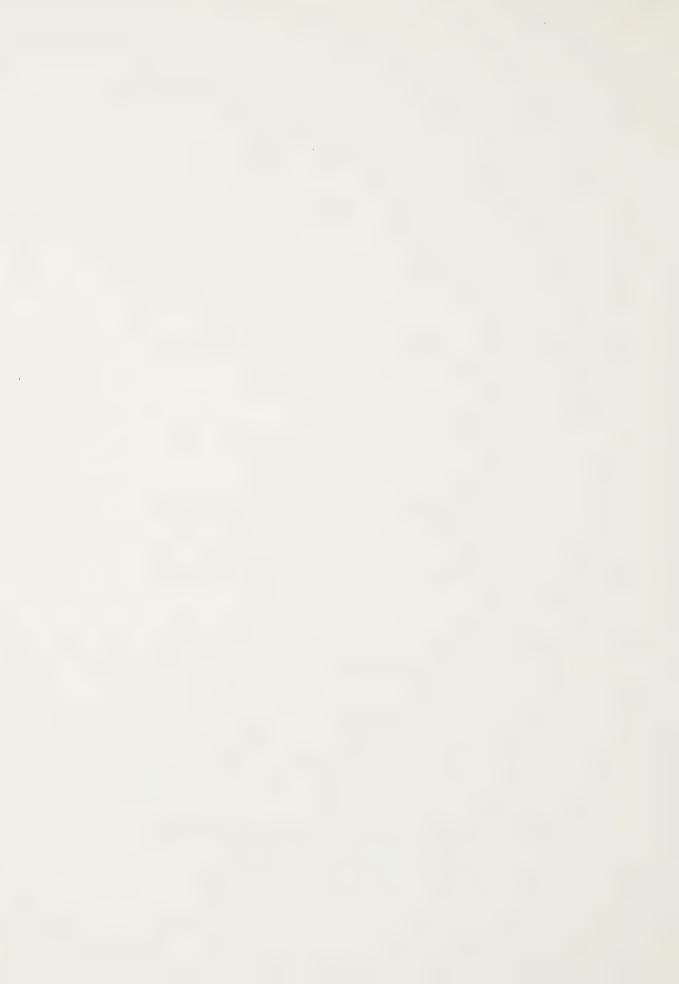vision as competition--a parasite."

Griffiths' system would provide Canadians with far more
programming than they now receive. But quantity does not necessarily
imply variety--nor, therefore, alternatives. Several participants
objected that a national cable network, despite its obvious advan-
tages, would produce a proliferation of present-day, commercial TV
programming. As one put it: "We'd see not just 'I love Lucy' but
'Lucy Loves Me' and 'Lucy and I'."

The real difficulty, as many at the Seminar saw it, lay
less in the nature of the transmission system than in the character
of those who owned and operated it. The commercial character of
network television--and the CBC as much as the private network--
came in for repeated criticism, until one participant declared "let's
nationalize the CBC".

Software from Hardware

At this point the concept developed of separating ownership
of the transmission system from ownership of the programs carried.
According to broadcaster Stanley Burke: "We should be considering information
systems as a public utility, not as a private monopoly." The public
utility approach to communications hardware attracted the attention
of several workshops. Participants were about evenly divided on
whether communications systems should be operated by government or by

a well-regulated commercial undertaking.

The advantage of the public utility approach to broadcasting, according to its advocates, was that services could be extended across the country to all potential subscribers. Producers and programmers would have unrestricted access to the system, subject to their ability to pay the transmission costs.

For some participants, severing the chain of control between hardware and software still left too many links in place. One declared that programming would still be dominated by "the control-room priesthood", the traditional elite of directors, producers and script-writers. This criticism attracted considerable support, though one participant muttered, half-heard: "I have the uncomfortable feeling we're agreeing with Spiro Agnew."

Access therefore should be total. One of the most forceful advocates of this view was Stanley Burke, who declared that he was engaged in organizing a citizens' group which planned to secure free access to the cable television systems in Toronto (1) unencumbered by any control or censorship by the CATV operators. Yet both Burke, and David Hughes, found themselves in danger of being out-flanked. Some participants pointed out that, while the Thunder Bay and Toronto citizens' groups would undoubtedly turn out programs far more widely representative than those made available on commercial television, their productionswould still reflect the interests and value judgments of the groups themselves. In the end, broadcasting would still belong

(1) Organized, in August, 1970, as Intercom.

to that relatively small number of Canadians who were concerned enough to produce programs, and the great majority of people would continue to be uninvolved. In those circumstances, it seemed un- likely that unlimited access to communications systems would in fact lead to anarchy, or to Jacques de Guise's prediction that, with everyone a programmer, "the society of the future may not be McLuhan's 'tribal v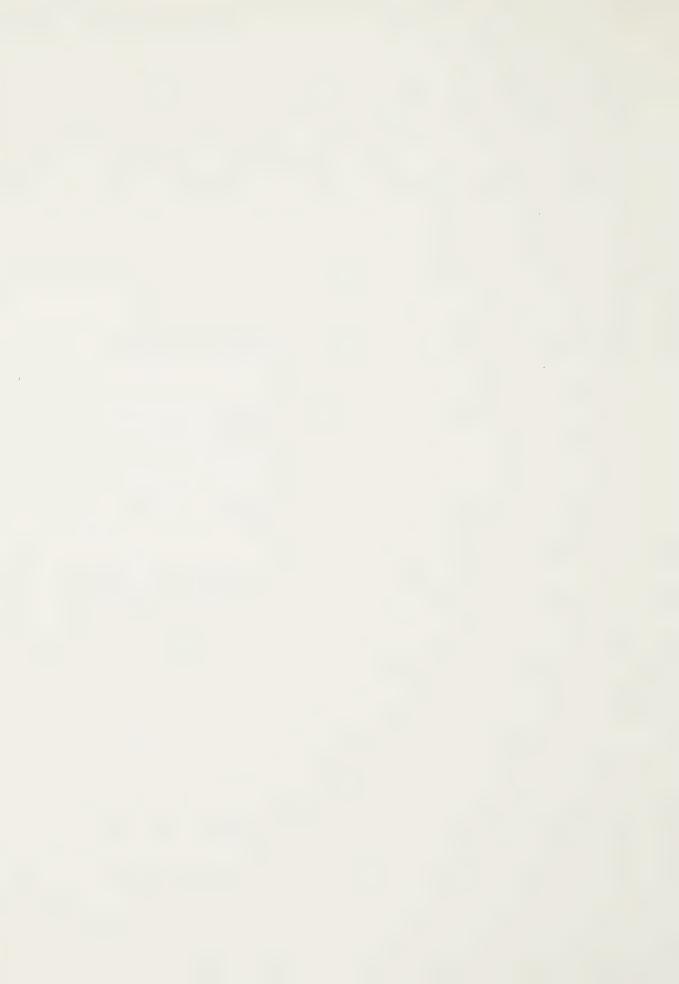illage' but 'a city of a thousand ghettos." Unlimited access was more likely to reinforce the powerful, as Westin said, since the ability to exploit knowledge varies widely, and not everyone possesses it.

Plainly, access does have limits - imposed by costs and by the scarcity of the necessary technology. And limits imply control, in some form. As one workshop put it, "who would decide what information should be collected, and how should it be used?"

The Individual in Control

The individual should make those choices, many at the Seminar believed. And they argued that the entire trend of information techno- logy was to create instruments which, in the words of Michael Harrison of Southam Business Publications, "respond to the individual's need", and so leave control ultimately in his hands.

Although the mass media were resorting to such devices as radio 'hot-line' shows and newspaper 'Action Line' columns, Harrison maintained "these efforts at adaptation by existing media may be only palliatives in the face of the inescapable fact that no truly mass medium can respond to everyone's individual needs. 'Individualized'

media, like data banks, are "the new wave of media development." The user is able to enter into a dialogue--to share his experience via a common communication channel and to react to the information presented by the bank and have it react to him."

Several speakers saw enormous social benefits to be gained by the development of computerized data banks. "The growth of a series of data banks", said Diana Ironside, "containing data and information to serve high-priority needs of citizens and decision-makers, could alleviate 'information starvation' to a marked extent. What types of information should be accessible to the public freely? A partial list might include current and frequently updated information relating to availability and costs of a wide range of consumer goods, educational opportunities, job opportunities, housing and real estate data, counselling centers, health services, welfare services, federal, provincial and municipal government services."

Monique Ouellette of the Canadian Council on Urban and Regional Research described the Council's plans for establishing an information service on the widest possible range of urban matters, and Ottawa economist Gail Stewart stressed the need for a national consumer affairs data bank.

Several businessmen present argued that National information services should not be government run. Harrison argued that "the government has no place in the operation of the nation's media ...I also believe, however, that government should give support to research and development into information generation and transfer systems that could be supported economically with private means."

D.D. Lockhart of the Canadian Lumbermen's Association believed that "industry generally views with alarm the concept of some enormous data retrieval system. I think there is a reluctance on the part of industry to have too much government involvement in this."

"Ideally, information services should be provided at the same cost throughout the nation to minimize regional discrimination", said computer systems consultant Mike Lucas. "It is doubtful that an electronic data bank service will find many customers outside the heavily populated areas of the country", if these customers have to bear the full cost of communications. The solution might be "an electronic data transportation utility which can provide services throughout the nation at well-defined rates." It would appear that "some form of subsidy will be required."

Discussion frequently returned to the growing disparity in access to information between metropolitan and rural regions. One workshop said that, since "we subsidize transportation costs in order to equalize them, why can't we equalize communication costs?" The "urban mentality" of communication planners came in for criticism, and one workship debated whether communications preceded or succeeded development, "like a highway into an isolated region." But a member of the business panel said communication costs "are only a minor factor in industrial location, minor compared to transportation, labour availability, tax structure and so on."

Whatever the economics of equalizing communication costs, the social benefits, in terms of cutting isolation and increasing access to information, are obvious. In arguing for the development of low-cost national data banks and information systems, Ron Pomfret
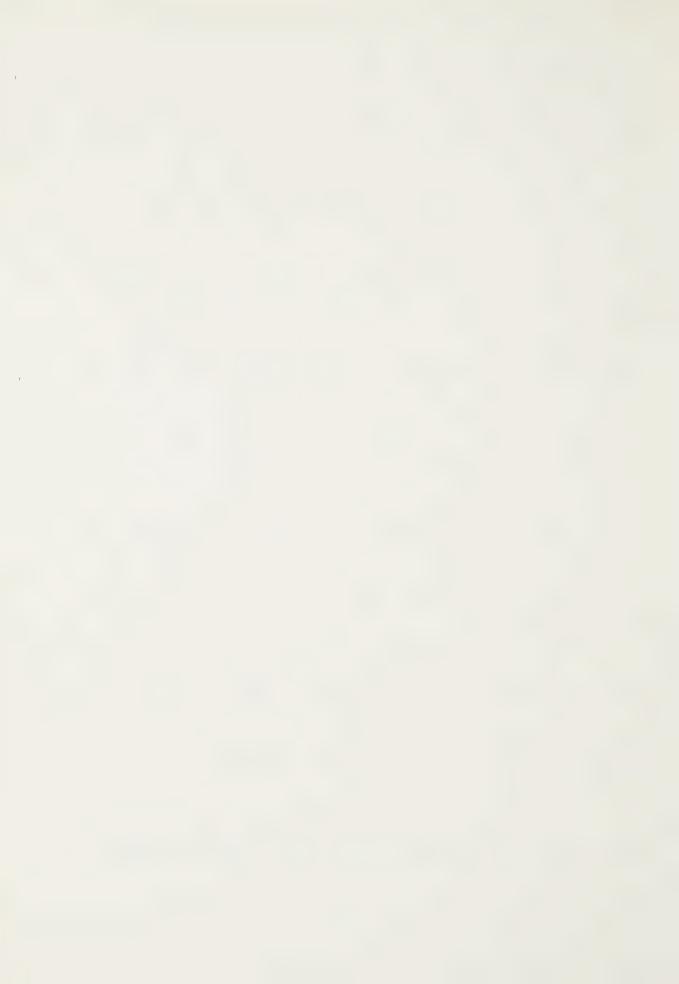
of the Department of Industry, Trade and Commerce, declared that "no single development would be of greater benefit than the introduction of a flat rate for telephone calls, regardless of distance." The flat rate - much like the mails - would let individuals in remote areas query data banks at the same cost which applied to those living in large cities. The idea was picked up by a number of participants.

Cost would probably decide the success of the Demand Medium proposed by Robert Russel of Orba Information. Russel foresaw his concept "fulfilling the individual's needs for truly personalized communication, offering him what he chooses, when he chooses, where he chooses: be it alpha-numeric (information retrieval) or analog (Demand Broadcasting)." A preliminary version of the latter - the Bell Canada - Ottawa Public School Board's Information Retrieval Television project - was demonstrated during the course of the Seminar. Such a system would give each individual the equivalent of a personal, but all encompassing, video library. When a particular film or program was selected, it would be promptly played back on his television screen.

Some insight into the costs of individual information systems was provided by Don Atkinson of Bell Canada. Providing service for each household in a community of 26,000 homes would cost between $25 million and $85 million a year, depending on the type of terminal installed.

A teletypewriter terminal able to receive data directly from a computer would cost $30 million a year; cathode ray terminals
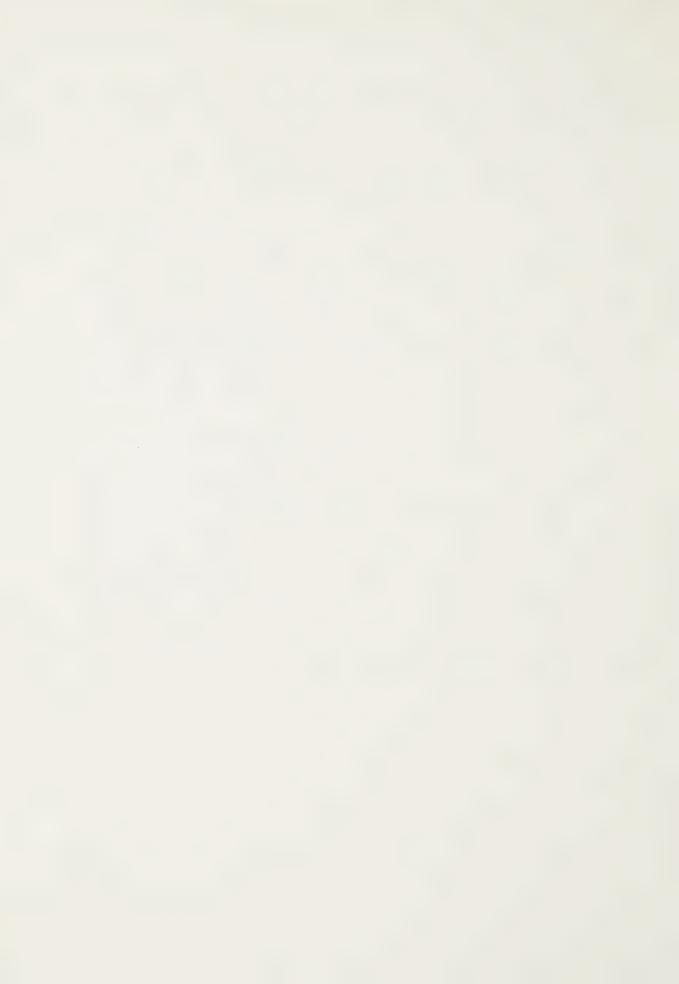
in each home able to receive visual computer data (graphics, charts, etc.)
would cost about $85 million a year; while a system of household
terminals which comprised touch-tone telephones able to make basic
inputs into a computer and receive recorded voice replies (for banking or
shopping) would cost about $25 million a year. The annual charge to
a subscriber would range from $1,000 to $2,600.

Clearly, the cost of such 'high technology' systems would
severely limit their use -- except in the predicted affluence of the
mature post-industrial society. Seminar participants realistically
concentrated their attention upon information systems which were more
imaginable, in technology and in cost.

The challenge here was to match available technology with
actual needs. But - full circle once more - how to assess those needs?

Any attempt to establish clear-cut priorities for telecommuni-
cations development, it was recognized, ran into the twin difficulties
of lack of information about society's needs for communication services,
and lack of information about the impact of such services and systems
upon society. Recommendations for coping with both these information-
gaps are listed in detail in Chapter Three.

Chapter Two

THE ARGUMENTS

The Technology of Information

In the opening panel four speakers described what can be done with existing communications technology and what may be possible with future technology. In varying degrees, they indicated what they themselves would like to see done with that technology.

Stuart Griffiths, Bushnell TV. The trends in the technology of broadcasting seem to point "not to evolution but to revolution." And the catalyst of this revolution is cable television.

Cable television, Griffiths noted, now reached approximately one million Canadian homes. At the same time the demand for educational television was rapidly increasing and "present plans call for distribution of programs by UHF transmitters, practical enough in the cities but providing little service in the outlying parts of the country."

"It is likely that the expansion of cable and ETV must soon intersect", when main urban areas have been completely wired and cable has extended into relatively small communities. At this point the advantage of cable distribution over UHF transmission will become obvious. Requirements that ETV and other specialized services be carried on cable will have forced the general development of the 20-25 channel system as the standard.

"We may expect to see the 25 channel cable system in common use within the next five years," replacing the existing broadcasting

system. "We see present-day television and cablevision in an evolving situation where their present roles will give way to new and better relationships, and for this reason we consider conventional television and cablevision as much the same thing."

The evolution, from conventional broadcasting to cable-casting, would not be "orderly and logical." Nor would it happen uniformly across the country. "The medium-size and small communities will feel the effects first; big cities with large concentrations of viewers will enable conventional, advertiser-financed television to continue longer...Viewers in small communities, often with fewer other social facilities, will not be content to continue as second-class television viewers."

At present the three Canadian networks daily carry some 20-25 hours of original Canadian programming, exclusive of local pro-grams. "The full development of a 25-channel cable system requires about 400 hours for each day's programming." Such a volume of program-ming would fragment audiences "into such small segments that adver-tiser financing is inadequate to the task. Some new basis of finan-cing is necessary. We think the most likely is by subscription" -- paid by individual home-owners for the cable service.

The total cost of the 25-channel national system Griffiths estimated at $890 million a year, compared to the $550 million now spent on radio and television, both public and private. Assuming cable links to all 5.5 million Canadian homes able to receive signals, Griffiths calculated that the full costs of the system could be met

by a subscription fee of $150 - $200 a year. The need for the $135 million in advertising revenues now received by conventional broadcasters would be eliminated.

"Such a system could distribute both English and French programming nationally at little increase in cost, thus contributing to national unity. Such a system would accelerate the development of additional Canadian programming production facilities and creative personnel, thus contributing to our national identity. Such a system might be developed at somewhat less than double our present rate of broadcasting expenditure." But, as Griffiths was quoted as saying in Chapter One, the necessary changes may be resisted by those who would be affected.

Ron Pomfret, Department of Industry, Trade and Commerce
"My role in this Seminar is to present another side of the communication picture, by describing non-electronic means of communications and indicating how they can be employed in conjunction with electronics technology."

The two most obvious forms of non-electronic communication were the printed page--"Books and related items, reports, pamphlets, catalogues"--and copying machines which can reproduce printed sheets for about 1-2 cents a page.

Facsimile transmission over telephone wires costs about $3 a page. But recently there have been significant developments in miniaturization - microfilm; microform; and microfiche. At Laval University, microfilm technology has been coupled with a closed-circuit, information retrieval system. "As a result a faculty member

remote from the Documentation Center can telephone a request for information to the Documentation Centre, and examine the results of the information retrieval operation on a TV monitor."

The use of microfiche is steadily increasing. Microfiche readers are now available in the United States for $50, but cost $75 in Canada. "One wonders why a Canadian company cannot design and build a suitable microfiche reader for sale at less than $75." In the "Mini-Biblex" offered by the Quebec Bar Association, 323 legal volumes are reduced to two small drawers of microfiche, and as a result, "the small-town lawyer can now afford the legal resources of his big city confrère."

In the kind of information system foreseen by Pomfret, large amounts of information, like the complete contents of a book, will not be transmitted on demand to individual recipients via telephone or television. The user would buy either the book itself or a microfiche version. With a complete microfiche library in his home or office, he would use the telephone to initiate a search of a computerized index and identify relevant material in his library.

To establish such a system on a national basis, said Pomfret, three developments would be necessary:

(1) The widespread use of microforms and associated reader/printers.

(2) Replacement of the existing telephone by a unit which will also print out messages as a result of querying a computerized index to information.

(3) The elimination of long-distance charges for
telephone calls between stations in Canada. "If
information is to move freely across the country,
and if regional disparities of various kinds
are to be overcome, we must all be able to
communicate economically with each other."

Hans J. von Baeyer, Acres Intertel. Two types of information
should be distinguished. "Primary, being the original material itself,
in the form of a publication or some identifiable topic or a listing
of raw data; and Secondary, denoting the result of processing primary
information in order to ease access to it." Examples of 'secondary'
information would include abstracts, reviews and bibliographic
listings.

"Once secondary information is available in machine readable
form it can easily be stored and retrieved from computer memory de-
vices, whereas the storage of primary information, because of its
bulkiness, must still to a large extent rely on conventional storage
and information retrieval mechanisms such as libraries."

"Since there is little cohesion between the existing
centers of information, and since exchange of secondary (i.e.
reference) information remains rudimentary, "users often had diffi-
culty locating sources of material. What was needed was a series of
information retrieval networks. "Such networking does NOT amount to
the establishment of a centralized data bank, and it does NOT constitute
a monolithic information source ....It requires only that the contents

of each individual collection be known, identified and listed on an associated regional computer facility, thereby forming, together with other regional facilities, a system from which at any location reference information can be obtained, leading eventually in hierarchical order to the answer for a specific request."

The details of such a system of networks, von Baeyer explained, could be found in Chapter 7 of Part II of the special study No. 8 on Science and Technical Information in Canada, published in 1969 by the Science Council of Canada.

"It is by no means implied that there should be sophisticated remote access consoles at every remote location in the country. Nor is it implied that everybody wanting to make an inquiry must be familiar with the coding and index principles of the network operation. Human interfaces and human interpretation of content and language of the inquiry will for a long time provide the most reliable method of accessing the network."

In some ways, von Baeyer said, his presentation was a post-factum rationalization, because several networks already existed between universities within certain regions. Provincial information systems are being planned and implemented in special fields such as education and health services, and the National Research Council has been developing its Technical Information Service.

Don Atkinson, Bell Canada. His paper concerned man-machine "interactive" information systems in which the user is separated from the storage location by either physical distance or time, and where a telecommunications link is used to bridge the gap.

The critical factor which determines the design and therefore the cost of any such system was "the need to know." "To consider retrieving a newspaper such as the Montreal Star from a data bank and reproducing it electronically in its original form seems very remote," because it is easily and quickly available by mail. "Generally speaking, telecommunications become important when time becomes a predominant and critical factor. This need tends to supplant other facets which would normally come into play, such as a very low cost for slow availability."

In any interactive telecommunications information system, total costs, which in turn must be related to the "utility value" of the proposed system, depend upon three principal variables: "(1) distance; (2) speed of display which is related to bandwidth, and (3) the resolution of the reproduction required."

For the benefit of those attending the Seminar, Atkinson estimated the probable costs of installing an interactive system in a hypothetical community of 26,000 households.

The types of terminals Atkinson envisaged, and their potential cost to subscribers, were discussed in Chapter One. The probability curves plotted by Atkinson to arrive at these estimates are contained in Appendix B. [1]

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(1) Charts 2, 3, 4 calculate probable annual costs for the total system (i.e. Chart #2, teletypewriter system: minimum cost of $10 million, potential maximum of $50 million, 50% probability of average cost of $30 million. Charts 5, 6, 7, 8, 9, calculate probable annual charges per subscriber. Costs of the total system and of the transmission component alone are plotted separately for each of the systems.

The Sociology of Access

Almost all the information systems discussed by the opening panel came with price tags of millions of dollars. By contrast, the mood of the second panel was captured by Duane Starcher when he said: "I'm talking about thousands of dollars, not mega-bucks and mega-systems with beautiful critical-path flow charts." In fact the sub-title of Starcher's paper was: What to do Outside the Wired City.

Duane Starcher, Memorial University of Newfoundland. His paper described an experiment in offering off-campus credit courses to adults living in small communities, up to 800 air miles away from the university.

"The tools of the system are common enough--television receivers, videotape recorders, long-distance conference telephone, texts and other printed materials normal to any university offering," said Starcher.

"What is uncommon is the particular application of these combined tools to a purely rural extension of the university's credit courses."

Traditional approaches to education television could not be considered, Starcher explained. Newfoundland could not afford the kind of UHF educational network being planned by Ontario, and the CRTC's directive that all cable operators must reserve one channel for ETV was meaningless since there are no cable systems in Newfoundland.

A start toward filling the gap, in adult education, had been made by correspondence courses. "But more was needed than

scattered enrolment in correspondence courses--a method was needed
that would actively encourage participation, not only in university
courses but group participation on a regular and frequent basis."

The decision was therefore taken to organize a 25-week
video-tape credit course. Six communities, each equipped with a
District Vocational School, were selected for the experiment:
Port-aux-Basques, Stephenville, Labrador City, Lewisporte,
Clarenville, Burin. (Labrador City had no Vocational School and a
high school was used instead). All the 33 programs for the course,
"The Psychology of Learning", were prepared at the University's ETV
Center. Each distant community was equipped with a video monitor-
receiver to playback the tapes, which were distributed by mail.

To provide direct inter-action between the professor and
the 224 students, arrangements were made to link each community to
each other and to the university by conference telephone calls.
But the technical standards of the connection were almost always
poor, sometimes non-existent, and "the tensions caused by these
uncertainties inhibited the students...In practice it proved im-
possible." In the end, audio tapes were exchanged between
students and professor, as described in Chapter One.

Electronic communication was supported by printed back-
ground material and texts. "In total, it could not be said that the
students were deprived of necessary material by distance from the
Memorial library."

At the end of the experiment, students in the outports
passed the course with marks as high as those of on-campus students -

who had the extra advantage of having taken an introductory
psychology course. As a result of this success, the 1970-71 program
was extended to 13 communities from the original six and to three
credit courses (two in Education) from the original one. The
ultimate target is six courses going to 25 remote communities.

"It is clear", Starcher said, "that the method of distri-
bution here described is a stop-gap measure particularly suited to
the present needs of Newfoundland." But the techniques for turning
the "tools of the mass media into an economical device for reaching
small, specific, remote populations" can be used elsewhere in Canada,
and particularly in the North.

"Clearly, the means to move information constitutes a
national resource. Although education is held to be a provincial
responsibility, educated persons...are themselves a national re-
source unbounded by provincial jurisdictions...Education needs access
to the information circuitry of the nation more than it requires
access to any other national resource."

Jacques de Guise, Laval University. Regional disparities
in access to information tend to be increased by telecommunications
technology. The unequal access available via the telephone, for
example, has already been described in Chapter One.

"It is not so much a question of under-development as a
question of backwardness in relation to a competing large city."
This backwardness may well increase "because modern technological
developments must respond to the needs of profitability" and there-
fore they favour the ever-increasing urban agglomerations.

"Far be it for me to suggest that the telephone, or Bell-Canada, should be solely responsible for the development or under-development of a region. The telephone is only one factor among many."

De Guise's second example, television, has already been mentioned in Chapter One. "A television set does not sell for less in Rimouski than in Montreal, even though in Montreal the quantity of television services available is four times higher (without taking account of cable television or of American stations)."

Those who live in small communities far from large metro-politan centers are often starved for entertainment. "As compen-sation one would expect that, in all logic, they would be able to receive more television programs than others; in fact the evidence is that quite the reverse takes place." Cultural and ethnic minorities in urban areas suffer from similar inequalities. "Never, it seems, has it occurred to us that television station licences in large cities should contain a clause making provision of service to unprofitable groups obligatory."

De Guise's theory about the 'anarchic nature' of techno-logical development was mentioned early in Chapter One, together with his belief in the predominance of economic profit over human values. "This confusion between technological innovation and social progress, or between economic growth and social development", explains the increasing inequalities between peoples or between classes of people. Technology must be harnessed to serve our values and our ideals. "At present we are paying insane sums to acquire technology; we are paying an even more enormous sum to adapt the population to these new technologies."

As De Guise saw it, any case of technological development, such as the installation of telephones, involved three factors: technical, economic and social - by which he meant the benefits derived from reducing inequalities in telephone service. "Whenever the attempt is made to coordinate these three objectives, it is the social fact that will be sacrificed." It should be possible, he argued, "to concentrate research on techniques which would permit the economic interconnection of distant regions with large centers; but the anarchic character of technological development concentrates research on the video-phone." As a result, technology not only fails to diminish regional inequalities, but it increases them.

And yet, De Guise found valid reasons for optimism in some of the new opportunities provided by telecommunications systems. "The first consequence will be an expansion of the social horizons of the citizen of the future...In the same way as man can now control, build and modify his physical environment, he will be able to do the same for his mental universe." One 'science-fiction' possibility was that "after having been tradition-oriented, inner-directed and other-directed, man will become computer-oriented." Culture will be in a state of perpetual transformation, resulting in either "homogeonization as a consequence of increasing dependence upon authority" or "a plethora of micro-cultures more or less separated from one another."

Godwin Chu, University of Victoria. (Mr. Chu was unable to attend the Seminar, but his paper was distributed to participants. His place on the panel was taken by David Hughes).

"If we want people to assume new social roles which they are hitherto unaccustomed to, can we increase this likelihood by increasing their access to such information as will be necessary for playing their new roles?"

Information according to Chu is "any stimulus which a person perceives in his environment, and which is taken into account in his responding to that aspect of his environment." That stimulus could be anything from a traffic light to an item in the morning newspaper.

In the 'pyramid'-shaped structure of society, the great majority of people have relatively little information. Only a very few people at the top of the pyramid have a great deal. "Such an uneven distribution is both inevitable and not necessarily undesirable, as long as it does not hamper the adequate playing of the various social roles." The more complex a person's social role, the more information he will require. In terms of motivating an individual to assume a new social role, "media information performs the catalytic function." In society to-day, "media information is of such importance as almost to have the status of a prerequisite."

T. Joseph Scanlon, Carleton University.

Encounter, held in February 1970, was an attempt "to get the citizens of the metropolitan area of Halifax concerned about their own community." Twelve experts on all aspects of urban problems came to Halifax for a week to toss out ideas, listen to opinions and engage in open debate with residents about local issues. Encounter attracted increasingly large audiences - up to 1,200 at one session - and significant interaction developed with the various media covering the meetings.

"The decision (by the local media) to treat the whole Encounter process as a major event meant that each Encounter was given media treatment and that, in this way, a number of community groups not used to getting access to radio, television or print, found what they had to say was treated with respect."

Radio provided spot news coverage, public affairs programs and hot-line shows. "While radio conveyed excitement, drama--and involvement," massive television coverage made the 12 members of the Encounter team into public personalities. "This had the useful effect of making it easier for individuals to talk to panel members after Encounter sessions because they felt they knew them."

The local daily newspaper "took a severe anti-Encounter line" both in its editorials and its cartoons. At the suggestion of the Encounter group, citizens wrote to the paper expressing their opinions about its editorial views. "Although letters to the editor in Halifax rarely run to more than four or five on any topic, Encounter provoked more than 100 letters, all but a handful against the paper's editorial policy." Quite a different line was taken by an independent bi-weekly, the Fourth Estate, "which has been running its own private encounter with the Nova Scotia establishment (and which) emerged during Encounter week as a significant force in the community."

Scanlon concluded that "print, though a new kind of print, is still as important as ever."

Data Banks and the Public Interest

The coming medium, according to many at the Seminar, is the computerized information system. Four speakers discussed different

aspects of data banks and their relation to the public interest. Michael
Lucas, the only member of the panel on Business Aspects of Access to
Information to prepare an advance position paper, also discussed data
banks. His paper is included at the end of this section.

Diana Ironside, Ontario Institute for Studies in Education.
The development of data banks raises two sets of questions.

The first set is technical. "Such challenging problems as
developing information management software, statistical packages, and
appropriate user-oriented languages, are the job of our computer
scientists."

The second set is social. "We must be concerned about who
monitors the decisions about the integrity of the information collected,
the actual data base environment, the provision and type of access modes,
the centralization and control of sensitive files, the linking of a
series of machine-readable data bases into larger and more comprehensive
data banks, and other similar issues which have a potentially powerful
impact on the quality of the social environment. What types of infor-
mation should be banked in the public interest? How do we capture
the relevant information? How do we ensure accuracy and integrity of
output? How should information be organized to provide the kind of
output needed by our citizens? How do we uncover errors in the system?
How do we guarantee protection for the individual's own file and
prevent invasion of his privacy? How do we assure the user of anony-
mity of use? How do we structure the system so that it is continually
sensitive to the values and priorities of the people it serves?

"The citizen's right to information has been eroded by a variety of factors, including the explosion of information, lack of adequate systems for the storage and retrieval of pertinent and relevant information, and the inability of the political and bureaucratic systems to develop effective strategies ... to solve the crisis."

As recorded in Chapter One, Miss Ironside suggested that the situation could be markedly improved by developing a series of public data banks, offering a wide variety of free services which have already been described. At the same time "we will be required also to provide appropriate public access to the increasing number of professional and special purpose data banks being developed now with public funds" such as the Canadian Data Bank at the Dominion Bureau of Statistics, and various municipal urban data and information systems. "The access route may be a telephone, a TV screen, or a building in the middle of a town--what really matters is whether the 'terminal' is linked to a body of organized, accurate and relevant data." Inter-connection between data banks would be a further requirement, along with standardization of systems design, language and data base structure.

"Could public libraries be the interface between the general public and the public and private data banks?" They could package information derived from data banks for the specific use of individuals in their community public libraries. If libraries don't assume such a role a "plethora of information centers in the community, sponsored by a variety of agencies, all with a mandate to provide "information and advice", may develop and plunge us all into chaos."

Miss Ironside said it was vital to ensure that the infor-mation in a data bank was accurate. "A greater danger may reside, however, in the idea of standardization so desirable in data banks". A bank might be used to identify someone "according to a set of specifications. This suggests that people will not be considered as individuals; that people can be measured; that people can be described in standard terms. People become objects in such a system; they cannot be consulted." And she quoted the words of one information systems authority: "The most efficient system for people is that which enhances their humanness."[1]

Michael Harrison, Southam Business Publications Ltd.
"The current star of the individualized media firmament is the on-line interactive system...Some experimental systems have proved that... joining many individuals with access to a common data base can speed the process of agreeing on a component design, a legal draft, or what-ever is or will be the subject matter of discussion."

"Demand media" and "interactive media" are challenging and eroding the traditional dominance of the mass media, which despite their various efforts, cannot really meet individual needs.

But 'individualized' media, like data banks, present their own problems. Sometimes users are not sufficiently knowledgeable to exploit the full potential of the system. Demand media will have to develop by trial and error. And in the meantime, there are some crucial issues to settle: "Who will control such banks? Who will provide the information in them?"

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(1) M.E. Maron, "Large scale data banks: will people be treated as machines?" Special libraries, 60: 1 (Jan. 1969), pp. 3 - 9.

The government has made the mass media "subject to the general laws of copyright, slander, obscenity, public health." It has also created crown corporations in the fields of broadcasting and film production. Should the government also become actively involved with the new media, and operate information banks? In Harrison's view, it shouldn't.

Harrison stated his personal beliefs concerning the development of data banks and information transfer systems:

1. The gathering of information should be unencumbered, indeed encouraged.

2. The provider of information has a proprietary right to it.

3. There is a fundamental distinction between information content and the communications media which disseminate it.

4. Gatherers and disseminators of information apply subjective judgment over content and form. Therefore no exclusivity should be given either to mass or individualized media.

5. Users should have freedom of choice among media.

Lyman Richardson, T-Scan Ltd. There are two kinds of information systems: Open Systems "for which there is no readily discernible feedback", such as books and broadcasting; and Closed Systems, "where the receiver of information is in a position to interact with the sender, within the same time domain." The latter includes person-to-person, person-to-machine and machine-to-machine types of systems.

Factors which would determine the design of any national data bank include: Response; Reliability; Manageability; Expansibility and Cost. The volume of information to be stored, and the speed at which it was to be accessed, were other key factors. "A National Data Bank could very well make use of less conventional storage media, such as a photographic store, which is reputedly capable of storing a million binary bits of information per square inch of surface area. This would be useful for large volume reference type information which is seldom changing. The more volatile information could then be maintained in conventional media."

Communications system design would involve trade-offs between the importance of the data and the cost of using it. "For example, a line printer could be located in the Post Office and queries accepted by telephone." Simple operations could be administered through the use of conventional teletype equipment in TWX service, although an Arts Center might wish to use a cathode ray type agent set.

Monique Ouellette, Canadian Council on Urban and Regional Research. Information is increasingly "an essential element of urban management." It is also expensive, and probably "the cost of urban information will increase to several millions of dollars a year. This takes account only of information effectively obtained: it is impossible to evaluate the costs of poor decisions taken because the information which could have rectified it came too late, or not at all, to the competent authorities; beyond doubt, if one could calculate it, the costs would be exorbitant."

Several information services, in such fields as transportation, education and construction, already exist. But each is a separate project. Easier access to the various sources is needed, and better coordination.

The Canadian Council on Urban and Regional Research was planning an information service which would help users "to obtain all the pertinent information they needed, in a minimum of time and with a minimum of effort." To this end, the Council was studying both the needs for urban information and its sources. The new service would be "more than a data bank. It would be difficult to conceive of a data bank containing all the information necessary for the many and varied disciplines." Rather, the object was to link existing networks and other less organized but equally useful sources.

Michael J. Lucas, L & W Data Systems. "Information is the lifeblood of the business world." But the current "information explosion" has reached the point where "we have passed the saturation point in an individual's ability to read and absorb the flood of information. In order to stay informed an individual needs to dedicate a disproportionate amount of his working day to information gathering and reading."

Computerized information systems can help, but not all of them function satisfactorily. Many are technically-oriented rather than user-oriented, as described in Chapter One. Potential users of a data bank must assess the value of the service on two grounds: "The amount of existing costs which the data bank service will displace and the value of additional service which the service can provide. Both factors are hard to define, and "several market analyses in the field of information storage and retrieval have shown that the assessment of the value of a data bank is based mostly on individual attitudes rather than on economic facts."

Lucas's views on the need to provide information services at a standard cost throughout Canada were detailed in Chapter One, along with his suggestion for an electronic data transportation utility.

Information Overload

Data banks and video demand systems, coupled with multiple-channel cable networks, promise Canadians more information than was ever accessible before. Yet it is conceivable that the end result may be an unfortunate condition known as "information overload."

Thomas McPhail, Department of Communication Arts, Loyola College. "Even today, we can talk about information overload in the sense that there is a wealth of printed material, visual material, and sound sources that can, with relative ease, confound the average individual." There is a very real chance that humans will be unable to cope with the ever-increasing output of our multiplying communications systems. "We may unknowingly be pushing human society (and by we I mean educators as well as IBM, Xerox and National Cash Register), to a general state of pathology or neurosis."

Can people easily adapt to the ever-increasing rate of change generated by the communications industry? Is there an optimum or a maximum degree of change which human systems can endure? Nobody knows, and "we do not really have research tools or measurement scales that are conveniently designed for a thorough investigation of these fundamental areas."

One consequence of information overload, said McPhail, is that people may become so totally overwhelmed by their awareness of problems - such as campus unrest, military misappropriations, environmental pollution

and drug addiction - that they may "turn to some type of demagogue", offering "very simplistic slogans that provide people with an easy way out." This yearning for over-simplification was termed the "Reader's Digest" Syndrome by McPhail.

There is another danger in increasing a person's knowledge of his society, because information raises his expectations about solutions to current problems. "Though we have quickened the pace by which problems are transmitted, we have failed in a corresponding fashion to quicken the solution, or the decision-making machinery."

McPhail questioned the current pre-occupation with innovations in the communications field, such as computers, satellites and laser. "Although at first they appear to offer man great benefits, one really wonders whether, considering the economic expense, society would not be better off allocating its resources elsewhere. For example, in transportation, in housing, or to fight poverty."

As shown in Chapter One, McPhail protested that technology has taken precedence over human needs. "I think the Government can and should take the initiative to correct the situation by sponsoring and encouraging research, in unison with the communications industries, to see exactly what we are doing to the quality of life."

John Dudley, School of Human Communication Disorders, McGill University. "The human develops skills, or is prewired to develop skills, which allow him to generate and receive messages. Once these skills are developed it would appear that human communication is limitless," and therefore an individual should have "limitless access to messages." But is this really the case?

A common, but not very well understood, condition occurs when two or more messages of differing cognitive value arrive simultaneously. One or more of these messages is suppressed, and "there is some evidence that it makes no difference what the message contains, or if the message is true or false."

Repetition also dulls the capacity to discriminate. "A message which on first presentation is unacceptable becomes neutral after many presentations."

If a medium, like television, "involves two or more modalities...we would expect the visual stimuli to take precedence over the audio signal",...because there appears to be "a hierarchy of access." But in fact the audio and visual components of multi-modal media are usually complimentary rather than competing. The two messages interact to increase the total impact of the message. "If the two messages are incompatible they nonetheless interact to produce false information. This is often seen in advertising."

"Under normal conditions the human mechanism can accept any information made available. With slight changes in the verbal mechanism, access is limited to the most redundant messages in the environment. A highly sophisticated mechanism becomes a group of disjointed systems. The accessible becomes inaccessible. Thus, we can view accessibility as unlimited, but vulnerable."

Benjamin D. Singer, Department of Sociology, University of Western Ontario. Singer's explanation of the three kinds of information channels within society was given in Chapter One. He believed that "there is a communication imbalance - a cultural lag, to use an early sociological term--which is characterized by a functional oversupply of one-way channels."

Also mentioned in Chapter One was Singer's concern about the social impact of that omnipresent one-way channel - television - which is contributing to the state of information overload. Singer was apprehensive that "the development of media technology may outstrip the culture's ability to create significant or desirable messages for it to carry. When we lose control of our media, we lose control of our culture."

At the same time, the multiplicity of mass media channels created by cable systems did not lead "to diversity and thus freedom of choice." More channels could simply mean more of the same.

Telecommunications can create interpersonal channels. But, as in the case of the telephone, they do not necessarily provide access to "information that is relevant to the individual." He cited the difficulties of getting information over the phone from institutions such as OHSIP, the Ontario hospital insurance scheme.

Perhaps, said Singer, the phone company "could serve as a communication ombudsman by operating feedback offices to accept and forward messages in order to increase the meaningful use of the phone for all segments of the populace. This would be especially valuable in establishing linkages for the deprived, minority groups."

Unfortunately, he continued, "the demands of the market place, as perceived by those in charge of our communication channels, have created a techno-market hegemony which does not really take account of human needs."

The first step toward a more rational use of communications technology, said Singer, "would be to inventory the information needs of people located throughout our social system... How do the poor cope?

What information is available to them through mass channels? How do they--when compared with professional classes--use the personal media?"

Education in the use of information channels must begin in elementary school.

In sum, we should "take a more critical view of our systems of communication-mass and interpersonal--for their relevance and redundance" and our aim should be "to make it possible for all segments of our population to gain their objectives by coping as individuals."

Chapter Three

CONCLUSIONS

A three-day multi-disciplinary Seminar called to discuss a
topic as broad as Access to Information (The Need to Know), is plainly
an inappropriate instrument for drafting precise policy recommendations.
Participants were advised that they were there "to define the right answers
and to suggest ways in which the right answers could be achieved, rather
than to recommend precise answers."

Some of the recommendations secured general, though not
unanimous, acceptance. Others were proposed by one or two workshops,
and some by a few individuals. In approximate order moving from general
to particular, the conclusions of the Seminar were:

> 1. Access to Information is, or should be a
>   right of citizenship.

Some participants doubted that access to information was a
right, or that, even if it was, whether it could ever be given practical
application. A substantial majority, however, believed that in our
information-abundant society, access to information should be raised
to the level of other fundamental rights such as freedom of speech, or
freedom of assembly. As one workshop put it: "Every citizen should have
a Right of Access to Information, resulting in a corresponding Right to
be Heard, and in both official languages."

> 2. The ultimate responsibility for ensuring access
>   to information rests with Government.

Business men attending the Seminar were the main opponents
of this generally accepted proposal, although others made plain their

mistrust of "the almost inevitable bureaucratization of anything the
Government puts its hands to." Among proponents of an activist role
for Government, one workshop stated: "We are getting to the stage
where communications is becoming just as important as electricity...
indeed, communications is the Government."

> 3. Government should consider developing a
>   national communications policy comparable
>   to national economic policy or national
>   welfare policy.

Participants noted that while a well-defined national broad-
casting policy exists, there is no equivalent national communications
policy. One workshop called for "a clearly-expressed set of national
(communications) priorities", which, "once agreed upon by the
majority and endorsed by all levels of government, would result in the
development of the telecommunications industry according to more
socially-meaningful lines."

While there was wide disagreement on the subject of government-
operated data banks, many participants expressed concern about the
present lack of ground-rules for information storage and retrieval.
One workshop report said "explicit rules governing personal data were
felt to be essential", and continued: "What is now urgently needed
are safeguards, rules and overall policy governing all aspects of
the content, use and users of social and technological data banks."

> 4. A key element of any national communications
>   policy would be the provision of a minimum
>   level of services to all citizens, no matter
>   where they live.

Regional (and socio-economic) disparities in access to in-
formation seized the attention of participants throughout the Seminar.

A general concern was summarized by one individual's view: "Toronto
is getting touchtone phones and video-phones while many Newfoundlanders
don't have any phones at all." But participants did not succeed in
defining an acceptable minimum level of service, or what was meant by
one workshop's suggestion for "a basic, one-way communications grid
serving all areas."

5. Steps should be taken to equalize communications
   costs throughout Canada, or at any rate to reduce
   the inequalities.

One workshop declared that "the government has to take steps
to make sure that the people get service at rates on a par throughout
the country." Equalized data transmission costs would enable proposed
national data banks to serve the community at large, and not just
those already advantaged. Several participants and one workshop ad-
vocated a national flat rate telephone charge, irrespective of distance.

6. Telecommunications hardware should be
   separated from software.

A substantial number of participants called for a separation
of medium from message, that is, ownership of broadcasting or data
transmission and distribution facilities from ownership of the material
carried.

"The essential communication services should be prime targets
for public utility regulation", one workshop declared. But another
reported "no agreement as to who should eventually own and control the
physical means of communication."

In the end the question of ownership - public, private or
mixed - was left open.

7. <u>To ensure the freest possible flow of
   information from producer to receiver,
   controls or censors should be removed,
   wherever possible.</u>

One suggested way of freeing the broadcasting flow was to
establish a national cable network, financed entirely by subscription
fees, and therefore independent of the restraints imposed by adver-
tisers. This proposal won general support, in part because a multiple-
channel system offered a way of enlarging the small group of directors,
producers, scriptwriters and commentators responsible for the bulk of
current programming.

One workshop recommended the creation of a national system
"with as many as 25 video channels, or equivalent in voice and data
transmission...(It) should be multiple-access and multiple-use and
compatible with a demand system...(it) should further be one which re-
flects and forms national and regional interests, in a social and
economic sense."

8. <u>If access to information is made a right of
   citizenship, the public will have to be taught
   to use information systems.</u>

As the ability to use information becomes more and more a
determinant of life styles, it is increasingly important for people
to have the necessary understanding. One workshop estimated that
"not more than 10 per cent of the population has the knowledge and skills
necessary to acquire access to existing information systems."

9. <u>If Government is to impose social constraints
   on the development of information technology
   it will need to know far more about the effects
   of that technology than it now does. One
   solution might be a communications research
   center or institute.</u>

The proposal for a center or institute received general support at the final plenary session. The most specific description given of such an institution was contained in one workshop report: "It would study and evaluate information in the context of its environment and give advice to government. The proposal envisioned two branches of the institute—pure and applied research—although it would be result-oriented. It would have degree-granting privileges and a rotating staff". Another specific proposal was for a national center to study new communication technologies such as EVR.

> 10. With or without a research center, steps should be taken to develop an information service for government, industry and universities on communications technology and environmental research.

This proposal was made from the floor, at the last session and received general support without discussion.

> 11. Those responsible for developing national communications systems must determine the information needs, actual and latent, of the various publics.

Such an undertaking is by no means easy since, as one workshop observed: "the people who are deprived of access to information are exactly the people who can't communicate their need for more." A specific proposal was that "The Department of Communications should be sending Task Forces out to these deprived areas to get first-hand information."

At the last session, a proposal for a "national teach-in" to determine communications needs received a mixed reception. Canadians in all walks of life would be asked their opinions, it was suggested, and their views aired across the country to elicit other opinions.

Several participants pointed out that the cost would be prohibitive. Others felt that nevertheless it constituted the kind of creative use of telecommunications that had to be tried. As one supporter put it: "I favour the idea. Quite possibly it won't work, but I'm in favour of the attempt anyway." And another said: "The new communications environment is creating the new Canada. We'd better find out what kind of Canada Canadians want."

On that positive note, the Seminar ended.

APPENDIX "A"

Seminar Chairman: R. Gwyn, Department of Communications

Plenary Session Chairman: Antonin Boisvert,
                           Radio-Quebec

Panelists:

1. Technology Panel

    Gilles Bergeron, Department of Communications (Chairman)
    D.M. Atkinson, Bell Canada *
    R.E. Pomfret, Department of Industry, Trade and Commerce*
    Hans von Baeyer, Acres Intertel Ltd. *
    Stuart Griffiths, Bushnell Communications Ltd. *

2. Data Banks and the Public Interest Panel

    Jacques Brazeau, University of Montreal (Chairman)
    Diana Ironside, Ontario Institute for Studies in
                    Education
    Michael Harrison, Southam Press *
    Lyman Richardson, T-Scan Ltd. *
    Monique Ouellette, Canadian Council on Urban and
                       Regional Research

3. Social Panel

    Gaetan Daoust, University of Montreal (Chairman)
    Duane Starcher, Memorial University *
    Jacques de Guise, Laval University *
    David Hughes, Thunder Bay, Ontario.
    Godwin Chu, University of Victoria, B. C. *
    Joe Scanlon, Carleton University *

4. Information Overload Panel

    Antonin Boisvert, Radio-Quebec (Chairman)
    John Dudley, Royal Victoria Hospital *
    Tom McPhail, Loyola College *
    Benjamin Singer, University of Western Ontario *

5. Business Panel

    André Det, Power Corporation (Chairman)
    D.D. Lockhart, Canadian Lumbermen's Association
    John Sealy, Samson, Belair, Riddell, Stead Inc.
    Mike Lucas, L&W Data Systems Ltd. *

* Position papers available on request.

WORKSHOP CHAIRMEN:

G. Bergeron, D. Hilton, F. Howard,
DeM. Marchand, Department of Communications
I. Midgley, Department of Regional Economic Expansion
Glen Milne, Carleton University

SEMINAR OBJECTIVES

"The purpose of the seminar, taking special account of regional disparities, would be to:

1. consider the ways by which telecommunications technology, systems, concepts and institutions can be developed and applied so as to approach the ideal of the optimum amount of information being made available to the maximum number of individuals, groups and institutions;

2. assess the costs and benefits (economic, social) of providing such information, and the costs (economic, social) of failing to do so.

Technology Panel

To discuss prepared papers; emphasis of panel discussion should be on economic costs of a spectrum of possible national information systems, i.e. voice, data, etc.

Business Panel

To assess the costs and benefits to business firms of access to information through effective transmission systems. (Emphasis of this discussion should be on the costs and benefits to firms located, or intending to locate, in under-privileged regions of the country)

Data Banks and the Public Interest Panel

To discuss ways to determine priorities, in terms of public interest, for the development of data banks, by what means and through what institutional arrangements that would ensure maximum access to such banks.
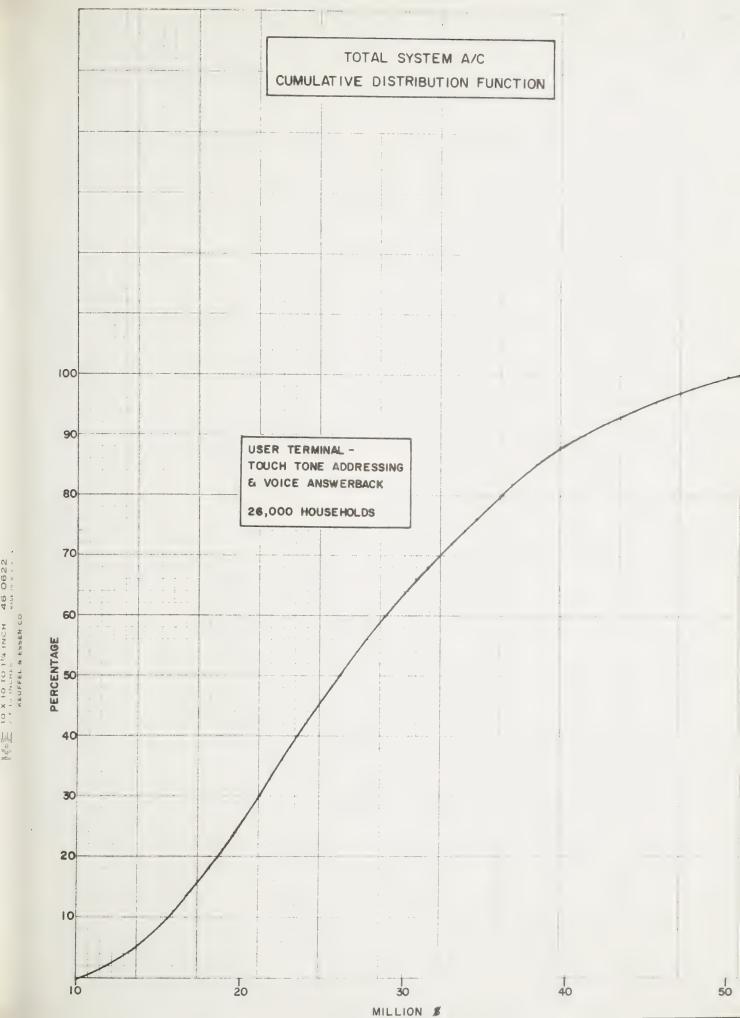
Information Overload Panel

To discuss the neuro-physiological and social effects of an overload of information to individuals and groups.
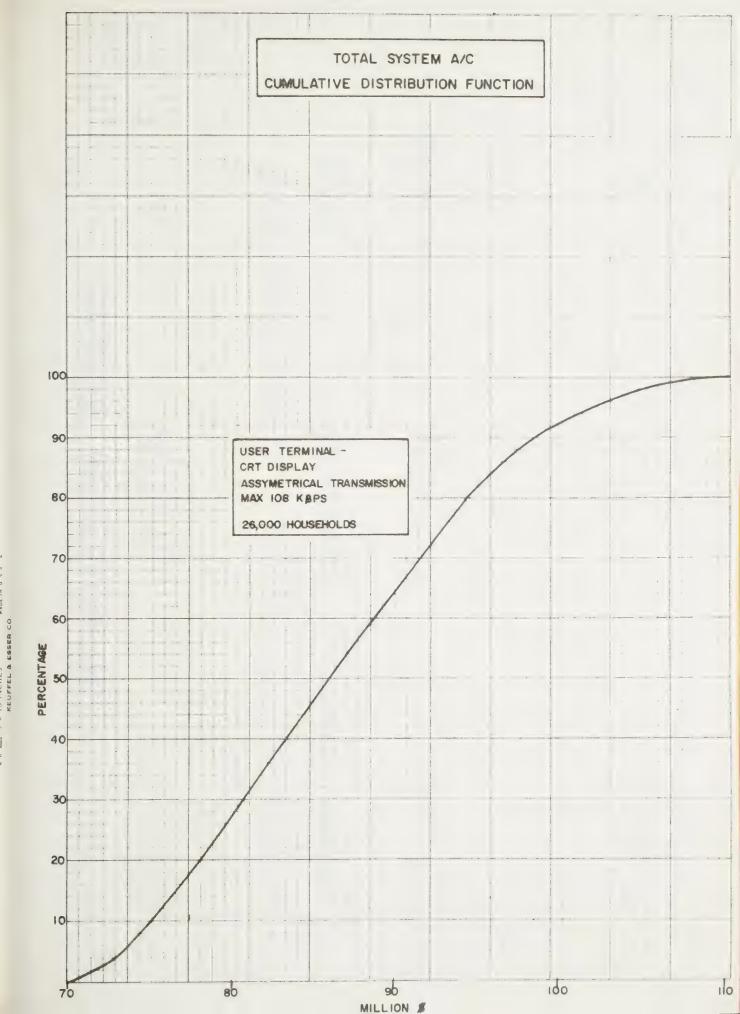
Social Panel

To discuss costs and social benefits of access to information by individuals or groups in underdeveloped areas (i.e. the poor, youth, linguistic and ethnic minorities)."

TOTAL SYSTEM A/C
CUMULATIVE DISTRIBUTION FUNCTION

USER TERMINAL -
TOUCH TONE ADDRESSING
& VOICE ANSWERBACK

26,000 HOUSEHOLDS

PERCENTAGE

MILLION $

TOTAL SYSTEM A/C
CUMULATIVE DISTRIBUTION FUNCTION

USER TERMINAL -
CRT DISPLAY
ASSYMETRICAL TRANSMISSION
MAX 108 KBPS

26,000 HOUSEHOLDS

PERCENTAGE

MILLION $

"INFORMATION ACCESS"
SYSTEM

INFORMATION STORAGE — PRODUCER

ACCESSING MECHANISM

USAGE MECHANISM — USER

TOTAL SYSTEM A/C
CUMULATIVE DISTRIBUTION FUNCTION

USER TERMINAL -
TELETYPEWRITER
HALF DUPLEX TRANSMISSION
MAX 300 BAUD

26,000 HOUSEHOLDS

TELECOMMISSION

Study 6(c)

Report on the Seminar on Telecommunications and the Arts

The Department of Communications

Report on the Seminar

on

Telecommunications and the Arts

sponsored by

The Department of Communications

The Secretary of State

The Canada Council, and

York University

at

York University

April 30 to May 3, 1970.

This is a Report on the Seminar and does not necessarily represent the views of the Department or of the federal Government. No commitment for future action should be inferred from the recommendations of the participants.

This Report is to be considered as a background working paper and no effort has been made to edit it for uniformity of terminology with other studies.

TABLE OF CONTENTS

"Technology is not cold and cold controlling;
it is merely a tool. The uses to which it is
put are decided by men. Technologists are
becoming increasingly concerned about the
applications of their work; they are fighting the
loss of touch with the totality of man's
experience that specialization and compartmentaliz-
ation have brought about. In the past the artist,
in his soul-search for a universal, timeless
message, has been as far apart from reality as the
scientist searching for the laws governing the
universe. And yet, though the artist has long
rejected the coldness of the manifestations of
new technologies, preferring until recently to
escape to the country and nature (which is fast
being invaded by technological fallout) he is now
attempting to come to grips with applied science
manifest. When the two work together, the artist
learns to stop floating and to work within
limitations and the technologist moves away from
that limiting narrow direction which he has
accepted, to find that poetry has a meaning for
him".

Michael Goldberg....
from a position paper
prepared for the seminar.

INTRODUCTION

Society's Navel

As often as those of mice and men, the best-laid schemes
of governments go off the track. Every now and then though, as if to
demonstrate the occasional supremacy of man over plan, such waywardness
results, not in programmed disaster, but in serendipitous accomplishment.
So it was with the Seminar on Telecommunications and the Arts, held
jointly by the Department of Communications, the Department of the
Secretary of State, the Canada Council and York University at York
during the first weekend in May, as part of the Telecommission inquiry
into communications in Canada.

When the four sponsors planned the conference, and invited
some 80 artists, arts administrators, educators, designers, architects,
film-makers, broadcasters, sociologists, scientists and engineers,
they intended the meeting to span the twin objectives of "evaluating
the impact of advanced telecommunications on the arts in Canada", and
"making policy recommendations for government and industry to consider". (1)
But within a few hours, the assembled company had turned the first
objective back to front. Rather than spending three days discussing
what telecommunications technology is doing to, and can do for the artist,
participants concerned themselves instead with the broader question of
what the artist can do for telecommunications. Or, as one participant
put it, to see that technology is used "not as a substitute for human
inter-action, but as a tool to enhance it".

(1) For full terms of reference, and conference program, see Appendix A.

Mordantly aware that most of the fantastic technical transformations of the last two decades have come as by-products either of the Cold War or the space race, and have been used to extend and solidify the existing power structure, they talked of bringing the artist, and through him all of the humanities, back "into the centre of the decision-making process". As a decision maker, the artist would work to develop an environment in which every individual can participate and indeed contribute, and one which, someone suggested, "is shaped by beauty and creative expression rather than dictated by efficiency and expedience".

In a way, the tersest description of the Seminar was also the most apt. As the report of one workshop put it, "The Group discussed need to put soul in the system". Again and again the Seminar insisted that technology, of telecommunications or indeed of any kind, must be developed and controlled to serve society's needs, instead of society being shaped to fit the requirements of technology. To make this possible, the Seminar called for multi-disciplinary research, encompassing not just the arts but all social sciences, working closely with tech- nology, and, as one workshop put it, conducted "even in advance of hard- ware capacities".

Specifically, participants proposed the creation of some type of multi-disciplinary research institute or system, perhaps a Council or a think-tank, and perhaps called Creative Communications Centre. But the Proposal was accompanied by deep misgivings about "the almost in- evitable beaureaucratization of any institute". In any case, participants agreed that far closer working relationships were needed between artists

and communications engineers and scientists, in government and industry, along with a far more effective system for exchanging information about artistic or technical work in progress.[1]

Yet none of these specific conclusions was as important in the long run as the reassurance the meeting provided, at least, as one journalist saw it, "that Canada has a creative elite less concerned with wielding power than with getting us all to wield it."[2]

Such a concern - coupled with the presence of scientists and engineers at a conference about the arts - marked a new stage in the continuing dialogue between the Canadian arts and Canadian society, which began almost a decade ago at the epochal Canadian Conference of the Arts. At that three day talkathon, held at the O'Keefe Centre in Toronto in May 1961, the week that Alan Shephard became the first American in space, artists in the mass first confronted the public in the mass and, "generated in some odd, dim and lovely way, a little of that miraculous energy that transforms a group of people in a community".[3]

Steadily during the Sixties, through a series of equally productive though less flamboyant gatherings, the dialogue deepened, and the sense of community strengthened.[4] And yet, in the last analysis,

(1) Conclusions and recommendations of the Seminar are described in the body of the text and are listed in full in the final chapter.

(2) Doris Giller. "Turning on to the Plug-In", Montreal Star, May 9, 1970.

(3) Elizabeth Kilbourn. "The Scene". Canadian Art., September-October, 1961.

(4) At Seminar '65, sponsored by the Department of the Secretary of State and the Canadian Conference of the Arts artists met directly with a Minister of the Crown to suggest the future direction of federal support of the arts. At Seminar '68, arranged by the Canada Council and the Canadian Conference of the Arts, artists and educators discussed the question of arts education in Canadian schools.

these conferences were concerned with defining the contribution -
large and long overdue as artists saw it - that Canadian society
should make to the Canadian artist. At the first Canadian arts
conference of the seventies, however, with man on the moon and
1984 rapidly approaching (at least in time), the artists turned their
attention outward and, as one delegate suggested, "looked at society's
navel instead of their own".

ARTIST AND SCIENTIST

Dynamic Interdependence

In an important way, the shape of the meeting was
ordained by the keynote speaker, Gyorgy Kepes, Director of the Center
for Advanced Visual Studies at the Massachusetts Institute of
Technology. An artist-philosopher, Kepes has spent a long career in
search of what he terms " a symbiosis between the traditional
egocentricity of art and the anonymity of science". Time and again
in his address, Kepes stressed the principle of "dynamic inter-
dependence" between the arts and technology, which, he suggested, is
"a life necessity and a historic necessity" if society, let alone art,
is to survive.

Dynamic interdependence, Kepes continued, implies mutual
need, mutual respect and, above all, a recognition of common interests.
But such recognition is "reflected very little in the work of artists
today". Even when art is turned to civic - and supposedly community
purposes - it reflects the individual ego of the artist. Architects,
far from interpreting the needs of the community, have all too often
become "design dictators". Even those artists who work with computers
and electronic devices are more often interested in using them as toys
than as tools directed towards a social cause.

And yet, Kepes went on, common cause between art and
technology was once the dominant force of civilization. During the
Middle Ages, it produced the great cathedrals of Europe. Refined and
rarefied, it resulted in St. Peter's and St. Paul's. Nor was the

alliance confined to architecture alone. As another philosofher of the arts, Kenneth Clark, has remarked, looking at the elegant globes and quadrants produced by the scientists of Newton's day: "Art and science had not yet drawn apart and these instruments are not only means to an end but symbols - symbols of hope that man might learn to master his environment and create a more humane and reasonable society." [1]

Since Newton's day, and at a quickening pace during our own, arts and science have gone their separate ways. In Clark's words: "we have begun to feel that the descendants of these beautiful shining objects may be going to destroy us." [2]

Twentieth-century society has fragmented still further, and in Gyorgy Kepes' opinion, at least part of the blame lies with the artist. Since the Renaissance, he has revelled in the concept of artist as hero, and has surrounded himself with an "ever-widening ego space." More recently, influenced by the 19th century "laissez-faire" ethic, he has buttressed his ego with an arrogant - and overweening - confidence in the individual, a confidence which today has reached its limit.

For the trouble is, Kepes went on, that the laissez-faire philosophy, as well as the pattern of art in the past are completely out of joint with the nature of art today, and the nature of man in the late twentieth century. As our frantic and belated concern for ecological survival illustrates, "man is at a critical state in his evolution; no

(1) Kenneth Clark. Civilisation. British Broadcasting Corporation
                      and John Murray, 1969, Ch. 8, p. 215.

(2) Ibid.

longer can the artist – or anyone else for that matter – view himself as an isolated creature." And so a new relationship – a new equilibrium – must be developed between man and his environment.

Kepes compares 'equilibrium' to the physical condition of homostasis – wherein the organism automatically adjusts itself to this or that excess in order to preserve its physiological balance. This process, which we take for granted in our own bodies, and which engineers have translated into the design of closed, self-regulating systems, must now be developed on the social and cultural levels. For this to happen, artists must learn, however painfully, to think in terms of systems.

On another occasion, Kepes amplified this most important point, in conversation with the critic Douglas Davis:

> Technology today does not simply imply a physical
> implement, a 'machine', mechanical or electronic,
> but a systematic, disciplined collaborative approach
> to a chosen objective. There is a new technology
> that Daniel Bell has called "intellectual technology"
> – this is what artists must accept and understand." (1)

By no means everyone at the Seminar agreed with Kepes. Indeed, his remarks triggered what one participant described as "a degree of instant polarization." Some, steeped in radical angst, and doubting the capacity of the technological establishment to respond to humanist pressure, saw his cautious optimism as dangerously, almost insidiously, appealing. Others were convinced that individuality –

(1) Douglas M. Davis. "Art and Technology – Conversations"
Art in America, January 1968.

which Kepes saw as destructive - was in fact the artist's most
precious attribute; and a few argued that the serious artist, far
from seeking a compromise with technology, should retreat from it
and seek a Rousseauian ideal through his own instinct and through
nature.

And yet, during the first panel discussion, Kepes'
plea was restated, and given urgency, by one of the youngest artists
present, Michael Goldberg, whose position paper had in a sense
presaged Kepes' remarks. "Time was when every artist could be his
own Thoreau. But the woods aren't there any more" he told the group.
"Let's not have individual ego trips. Let's have shared ego trips.
Let's not just move closer to each other. Let's see what we can do
for the good of society".

At no time was the shared ego trip a tidy, pre-arranged
progress, and none of the passengers wanted it to be. Indeed, it was
a measure of the general mood that instead of dividing into specialist
workshops to talk futuristic shop about the visual arts, the performing
arts, or film and broadcasting, participants almost unanimously chose
to remain within the get-acquainted, multi-disciplinary groups to which
they had been assigned for the first day. Even so, through a process
of natural selection abetted by the scheduling of the panel discussions,
certain themes and topics emerged in a semblance of order.

The first of these had to do with technological hard-
ware and its physical implications for the arts.

THE HARDWARE

> "I sincerely hope that _machines_ will never replace the
> creative artist, but in good conscience I cannot say
> that they never _could_."
>
>   Dennis Gabor. "Inventing the Future"
>   _Encounter_, May 1960.

Professor Gabor's article appeared in the same year that the Boeing aircraft company coined the term "computer graphics" and six years before the epochal "Nine Evenings" staged by Robert Rauschenberg and Billy Kluver at the New York Armoury brilliantly established the potential of art plus technology.

In 1970, the notion that the machine could replace the creative artist still seems as far fetched as Herman Kahn's thesis, which the Seminar chairman quoted, that "computers are likely to match, simulate or surpass some of man's most humanlike intellectual abilities, in addition to having some new kinds of capabilities that human beings do not have." Even so, technological developments, pyramiding and interacting upon one another, are producing an environment radically different from that of even 10 years ago. The Seminar explored two integral and interconnected parts of that environment, computers and telecommunications technology.[1]

(1) For a detailed study of techniques for the transfer of data in visual form, see Telecommission study 5 (g).

COMPUTERS

Living Inside a Bach Fugue

"Thinking" machines have come a long way since Charles Babbage's analytical machine of the 1840's which, one authority has noted, "embodied all the fundamental principles of the modern digital computer." Today's largest and fastest machines - and a "fourth" generation is due shortly to appear - can handle more than 100 simultaneous and distant users and have a memory capacity from which some 50 million characters a second can be processed. One of the largest current computerized information systems contains almost one million records on file and on the most active days 40,000 transactions are handled over about 80 terminals.

As the machines increase in capacity, speed, flexibility and complexity, so - encouragingly - do the human being who make them work: the programmers, who as Dr. R.A. Mason of IBM noted in his background paper, "give the computer their personality". And Dr. Mason explained:

> "By personality is meant the idiosyncratic quirks and anomalies resulting from programmer initiative in areas of specification, design and implementation. In a very real sense, the user of even complex systems finds himself face to face with the unique personality of an individual programmer at each stage of his interaction with a computer. The implications, if the future brings computer terminals into the home, are profound.

"It might be argued that there is in fact more art than
technology in computer programming .... Richard Todd
quotes a young programmer describing his work: 'like
living inside a Bach fugue'.[1] Perhaps trying to
describe the elegance and art of a computer programs is
like trying to describe the characteristics of a fine
wine. Only another connoisseur can appreciate the
description. Or perhaps it is more like trying to
describe the taste of a baked potato. At least the
wine connoisseur has a standard, accepted vocabulary."

More and more programming is being done in high level

languages like PL/1, Mason continued, but at present this means

trading off machine efficiency against programmer efficiency:

"The programs for large, terminal oriented, multi-
programmed, computers which might enhance our
participation in society are going to be very complex
and require sensitive design. Present programming
technology can build the required programs. But it
may be that present programming technology is a
larger roadblock to the wide application of such
systems than is the electronic technology."

(1) Richard Todd, "You are an Interfacer of Black Boxes".
The Atlantic, March 1970.

Computers and the Arts

In terms of the direct application of the computer to the arts, Mason's paper raised two key questions:

If "it is the programmer who gives the computer its personality", then what sort of computer programs have been developed for the arts and who is breathing life into them?

And if present programming technology is "a roadblock standing in the way of computer systems" in general, is it an even bigger obstacle to the application of computer systems to the arts?

The short answer to the first question, the Seminar discovered, is that a number of interesting programs have been developed, but very few have been devised by artists. The answer to the second question is an unequivocal 'yes'. For the arts, ipso facto, require a non-standard, and therefore costly, programming approach. Explaining these answers, however, demands a certain amount of background detail.

Computers can be used to support art, and also to create it.

The support function is easily defined: in essence it means information retrieval systems - central data banks linked to terminals - which can be used (a) as an aid to research in the arts, (b) as an information and communications systems for artists themselves and (c) as a means of disseminating information about the arts to the public.

Over the last half dozen years, artists and arts administrators have made various urgent requests for such a system. The prime recommendation of Seminar 66, for example, was "the

establishment of an information centre for the visual and environ-
mental arts." [1]   The comprehensive feasibility study which

followed saw the centre primarily in terms of a computerized service.

In 1969, the Report of the Task Force on Government Information

called on the federal government to "formulate a clear policy

concerning cultural information" and further suggested that "a study

be undertaken to report on the most efficient ways of applying future

and current technology to collecting and storing, retrieving and

distributing certain types of cultural information". [2]   And finally,

in his own paper for the Seminar, Dr. Mason suggested that: "a

computerized service for the artist, providing timely information about

events, competitions, scholarships, materials, and literature could be

implemented. An artist might express his interests and the computer

could select information matching his interests and mail it to him.

In time, an on-line service might be provided".

          Perhaps because the ground had been covered so many times

before, and with so little result, the need for an information system was

not the central topic of discussion at this seminar. Perhaps too,

participants were conscious of film-maker Jacques Godbout's warning

that the organized distribution of information, far from being

synonymous with communication "is in fact an aggression against

communication, against art, against the artist" and promotes the

attitude that 'how to know' is more important than 'how to live'."

(1) Canadian Conference on the Arts. Report of Seminar 66.

(2) To Know and Be Known. Report of the Task Force on Information.
     Queen's Printer 1969. Vol. 2. p. 321.

If one thinks of an information system only in terms of bombarding the public with printout lists of upcoming arts events, or pre-packaged biographies of artists, Godbout may well be right. But most participants saw it as something quite different - as a means of opening new capacities for awareness and sensitivity and of developing these capacities in the artist himself, in his audience and, last but not least, in the people who make decisions. "Sometimes 'to know' is also 'to live'," one delegate suggested. Another, an architect, gave a practical example of the benefits of a speeded-up information exchange. "Articles of vital interest to me - of interest in fact to anyone who is concerned with the quality of the environment - are often buried in the most obscure of journals. Having these on hand could make an enormous difference to my work". Used like this, a computerized service would, in large measure, fulfill Godbout's own definition of communications: "a pooling of objects, ideas or connotations."

And it was with the concern for _sharing_ uppermost, that the Seminar recommended that "an arts information retrieval system be developed and implemented as soon as possible."

Computer as Creator

As a tool for creating art, the computer remains a source of promise rather than achievement. "Computers can write poetry", Dr. Mason noted, "but not, perhaps, very good poetry."

The most telling illustration so far of what artists plus computers have done -- and what they promise -- has been Cybernetic Serendipity, a major international exhibition held at the Institute of Contemporary Arts in London in the autumn of 1968. A substantial number of Canadians made important contributions to that show, either as advisors or as exhibitors.[1] In the same year, Gordon Hines, a graduate student at Queen's and George Olshevsky, of the University of Toronto won, respectively, first and third prizes in the "Plotter Art 1968" international competition sponsored by California Computer Products Inc.

As Cybernetic Serendipity demonstrated, the most sophisticated application of computer to art so far has been in the field of music. In fact, the application of electricity to the production of music - as opposed to its reproduction - goes back to the early part of the century. Since the advent of the digital computer, intensive experiments have been conducted, using the computer as an aid to composition, and as a source of musical sound itself. In Canada, such a program has been underway for some time at the National Research Council.

(1) They were all invited to the Seminar. Those attending included:
Arnold Rockman, York University
Leslie Mezei, University of Toronto
Jean A. Baudot, University of Montreal
Petar Milojevic, Science Information Systems, Ottawa
Maurice Constant, University of Waterloo.

Since about 1960, a parallel development has taken place in computer graphics, ranging from static compositions to frames of motion pictures. Broadly speaking, there are two main kinds of graphics: ink drawings produced by a computer-driven plotter or moving pen; and graphics made on a cathode ray tube with an electron beam electrically deflected across the phosphorescent screen to produce a picture which can be automatically transferred onto paper or film. The principal Canadian centre for computer graphics is the Computer Science Department of the University of Toronto, under the direction of Professor Leslie Mezei. Experiments have also been carried out at the University of Waterloo.

In computer-generated film, a seminal development has taken place at the National Film Board. Under Kar Liang's direction, an animation stand has for the first time been linked to a computer, which not only schedules movements, but actually executes them automatically. If widely applied, this process could result in an enormous conserving of creative energy. Its first important product, Birdlings, by Norman McLaren and Kar Liang, appeared in 1967.

At the National Research Council, a general study of man-computer relationships is attempting to find out how computing technology can enhance man's creativity. Musicians and film animators from outside NRC are involved along with Council engineers. As F.V. Cairns, Head of NRC's Data Systems Section, explains:

"The man is creative; he may be an engineer, a scientist
or an artist. The computer is a tool. The man communicates
with the machine by means of computer-drawn pictures or
words on a CRT. The computer is controlled by a set of
pre-written, internally stored programs to which the man
has access through a graphic presentation on a CRT. He
communicates his choices by manipulating devices such as
thumbwheels, push buttons or a "light pen". The study
began in response to the anticipated needs of engineer and
scientist researchers. Its relevance to the arts, however,
was soon recognized. But artists alone cannot exploit this
technology. At least in the development, participation by
engineers is a necessity."

A somewhat more marginal application of computers has

been made to choreography and literature. At the University of

Montreal, for example, Jean Baudot has experimented extensively with

automatic sentence generation, resulting in grammatically correct

sentences where word occurrences are purely accidental and sometimes,

according to Baudot, have "a stylistic effect which can have

aesthetic value." The role of the computer in automated publishing,

and as a research tool for literature analysis, was described by

Glenn McInnes of Alphatext systems. "We are on the threshold of

computerized information ceasing to be archival." Authors will be

freed by the machine from the need to make "plodding manipulations."

"What would have been the effect, for example, on the
literary output of James Joyce? Joyce's manuscripts,
scored with an intricate system of coloured inks and
chalks, and referring back to a complicated system of
notebooks, suggest the painful pursuit of processes which
would no doubt have been expedited by the use of an
electronic machine...the mere transposition of Joyce's
handwritten manuscripts into a typewritten form suitable
for sending to a publisher required a gargantuan effort and
the results are not entirely reliable. The contribution
which would have been made by a computerized system

might have consisted of the use of intermixed typestyles and one might even plausibly suggest that Joyce's output would have been considerably greater."

Diverse as they are, all the artistically creative uses made of the computer have a common denominator: as Professor Mezei noted while introducing a series of films of computer graphics, "so far, these graphics have been produced almost entirely by scientists - not by artists".$^{(1)}$

As far as the democratization of the arts is concerned, this no doubt is a good thing. For it has involved people who in the normal course of events would never have put pencil to paper or brush to canvas. Indeed, as the director-playwright Jacques Languirand suggested, "perhaps the scientists are the real creators, the true poets of our era."

But if this is so, Languirand said it is partly because "the new tools alarm the artist whose technical training is generally not sufficiently advanced." Participants agreed with Languirand on the need for education. It is "mandatory for the artist to know exactly what he wants, and to be able to translate his artistic concepts into mathematical abstractions. We have passed the stage of master craftmanship with which the artist could be content up to now. It is no longer a question of dominating matter, but machinery."

(1) Dr. Mason, in his paper, quotes Jacia Reichardt who collected computer art for Computer Serendipity as saying she knows of only three artists who have actually produced computer graphics: "the rest have been made by scientists."

Access to computers is a related difficulty. Computer time is cripplingly expensive and, as Leslie Mezei pointed out, "no facility exists anywhere, so far, where artists can work at a regular basis on an art machine. The equipment for computer-assisted inter-active design is expensive, and not generally available to the artists; the software programmes are just beginning to be developed." Moreover, artists are likely to be the last ones considered when it comes to the wider distribution of computer facilities. According to F.V. Cairns of the National Research Council, communications facilities will largely be developed for the most economically important sectors of the community. "The relatively small number of artists and composers who want to use computers will impose added pressures on already loaded digital transmission systems which will have been developed for other users."

The Seminar, however, suggested some partial detours round these obstacles. It recommended, as one workshop report put it, "that a massive education program be undertaken in the use and application of the new technology, so that the artist might learn to use the new media with the same ease as the old pen and pencil."

As for access, it was proposed that artists interested in working with computers should join forces in approaching computer companies. This has been done with considerable success in Japan, and, as Leslie Mezei remarked, "Industry is much more likely to respond to a well thought out group request than to an individual daydream."

It was suggested also that government departments and agencies with computers should reserve part of their capacity for experiment by artists. The point was made as well that a number of centres in Canada have the potential for collaborative group efforts between artists and computer scientists. In British Columbia, for instance, cooperation might be possible between the Communications Arts Department at Simon Fraser University, the Computer Science Department at the University of British Columbia, and the interdisciplinary artists' organization, Intermedia.

And finally, it was suggested that the communications centres which each workshop in one way or another envisaged -- and which will be discussed in detail later on in this report -- would include computer facilities for artists within their frame of reference.

Telecommunications: A New Language

Though artists, by and large, have so far had little
contact with computers, over the last decade they have been involved
in what almost amounts to a love affair with some aspects of tele-
communications. Universities - Loyola and Simon Fraser are instances -
have sprouted new Communications Arts Departments. (In fact, a three-
day festival "Telecommunications and the Arts", organized by the
Communications Arts Department at Simon Fraser, followed hard on the
heels of the Seminar). At the same time, the widespread use of new
communication techniques has radically altered our concept of existing
art forms. "In the field of drama, for example", Jacques Languirand
noted "the Italian stage (which corresponds to the concept of a view-
point) is disappearing and being replaced by theatre-in-the-round, or
the U-shaped theatre, etc. (which corresponds to the notion of
communion around a narrator or event) or by the circular theatre -
"electric circus" where the play is staged around the spectators,
(and which corresponds to the concept of participation from the inside)."

More than this, the cross-breeding of artistic disciplines
which accompanied the adoption of telecommunications techniques has
resulted in a new art form - "multi-media". Werner Aellen of Vancouver's
Intermedia, the Canadian nerve centre of multi-disciplinary experiment,
sketched its development:

> "Ten years ago painters, theatre and lighting people,
> film-makers and poets began to explore multi image
> projection, twirling light and liquid die projection -
> ushering in the age of happenings and light shows.
> The new medium provided new tools of expression on the
> quality of their environment - e.g. sound and visual
> pollution, and the residual effects of the bombardment

of the senses experienced every day in the urban space.
The light show happenings phenomenon has been responsible
for a tremendous stimulation of the creativity of a
large portion of our population.

Today practically every church-basement or school
activity offers a multi-media experience. It has
become a new language."

End of Innocence

Because multi-media forms demand both a multi-disciplinary approach and close collaboration between artist and engineer, they have produced a number of organizations which make co-operation easier. Vancouver's Intermedia is one Canadian example; another is Montreal's Groupe Création. Predictably, the most complex development has taken place in the United States, where EAT (Experiments in Art and Technology) a New York based organization, claims 35 local chapters, 6,000 members, (including roughly 2,000 engineers and 2,000 artists) and has made about 500 matchings between the two.

And yet, for all the furor - or perhaps because of it - the new movement is beginning to show disturbing signs of burning itself out. According to some critics, practitioners have been so wrapped up in experiment for experiment's sake, so involved in what Kepes calls "the acrobatics of the new technology" that exciting possibility has turned, almost in the twinkling of a light show, to cliché. [1] As Douglas Davis wrote recently, reviewing four recent art-technology exhibitions, including the EAT-arranged Pepsi-Cola pavilion at Expo 70: "These shows, by their tired repetition of themes and devices that had been exploited time and again through the sixties, announced the end of innocence in the risky art-technology marriage. Now even the kids can spot the clinkers among the clanging gears." [2]

(1) Another factor, Mezei suggests, is "the lack of sufficient flexibility of control of the various devices used in multi-media forms. Small program control computers controlling the various "sensors" and "effectors" will allow these devices to be more responsive to the environment and to the artists who use them."

(2) Douglas M. Davis, "Improbable Marriage". Newsweek, April 20, 1970.

The gears may be changing. The premise of the international _Information_ exhibition which opened at New York's Museum of Modern Art in July, 1970, is that art is no longer concerned with the making of specific objects (i.e. sculpture, music, dance, poetry, etc. as autonomous entities) but with a concept or process in tune with the outside environment. In an age of instant and total communication, art instead becomes "minimal", or "conceptual" or "ecological".

Perhaps because participants realized this (indeed, the representatives from Intermedia said their attention was turning, increasingly, toward basic aesthetic research) the Seminar was concerned only peripherally with the practical logistics of art-technology co-operation. Delegates, it turned out, were much more interested in discussing the role of the artist in the broad context of total communications systems. And the most total of these systems is the "wired city".

Telecommunications: The Wired City

"The future is upon us. Technology has provided us with the coaxial cable, and the old limitations are swept out the window."

So proclaimed producer and film-maker Douglas Leiterman, and no one at the Seminar was inclined to disagree. Cable as yet is only in its infancy, but already it is revolutionizing broadcasting. As Dr. John de Mercado of the Department of Communications pointed out:

> "Nearly a million Canadian homes - and nearly a quarter of all urban households in Canada - subscribe to cable service. The number of subscribers connected to CATV systems in 1969 was 45% higher than in 1968. Existing systems are already capable of being adapted to accommodate 25 to 30 channels. And even though some obstacles continue to block the full utilization of this capability (these principally have to do with cost, and with the fact that Canadian home sets are designed to receive only 12 channels) it's commonly accepted that the 25 channel system will be in common use within five years".

To some observers, this development will mark the end of mass programming aimed at the dead centre of the wasteland. Communications Minister Eric Kierans has suggested that cable will "usher in the era of individual communications," and Leiterman shares this view. "If the new systems are properly managed," he continued, "there will be channels available for artists and scientists, for Women's Liberation and the Royal Bank and the Kiwanis club and maybe even for the Mafia...A real kind of choice will be offered to the viewer - not just a choice between watching Laugh-In on its original quarter of a million dollar production on NBC, or its $15,000 prior rerun on CBC."

But cable's programming potential is only the tip of the iceberg. For, unlike conventional "on air transmission", coaxial cable is capable (at a cost) of being 'switched'. [1] In other words, the

[1] For technical explanation see background paper prepared by John de Mercado.

viewer may eventually be able to talk back to his set. Loiterman
went on:

> "Within the 1970's, it is probable that more than one cable
> TV system will be installed in Canada with, say, 27 channels
> going into your home and 3 or 4 coming out of your home and
> back down the system.
>
> Several interesting consequences will flow from this piece
> of technology. For one thing, programs can be originated
> from any point in that system, without expensive micro-wave
> relays to transmit them back to the head-end; and without
> expensive mobile vans to record them on tape. Thus any
> school, hospital, arts centre or social club can be an
> origination point and a simple camera (connected to the end
> of the incoming cable) can send programmes out.
>
> The next interesting possibility - indeed probability - is
> that one channel can be reserved for feedback. Attached to
> your TV set will be from 3 to 10 touch-tone type buttons
> (depending on the sophistication required and the means of
> sharing the cost). In its simplest form, the buttons will
> allow the viewer to send back a signal saying yes, no or
> don't know. This automatically allows using the TV channel
> for step by step teaching. A simple instantaneous aggregate
> measurement of the responses will tell the TV instructor
> whether to repeat the point, or go on to the next step. The
> same aggregate counting system could be used to measure
> viewer responses: Did they enjoy the program? Do they want
> more of the same? Was it too dull? Too complicated?

As if this were not enough, coaxial cable may assume -
and what is more, augment - the functions of the telephone system. As
it presently exists, that system is marvellously flexible, allowing
instantaneous two-way communication between subscribers at any time.
For distribution, however, it depends on pairs of copper wires, or
"loops" which can transmit only voice signals, or those of low-speed
data type, such as telex. Cable, on the other hand, has a transmission
capability 300 times as great. If a switched cable system were introduced,
it could, conceivably put a computer terminal in every home, provide set-
side shopping and banking, a demand broadcasting service, a burglar
alarm and fire watch, and facsimile printouts of newspapers and books.
It could, in short, be the cornerstone of the "wired city".

THE SOFTWARE

A Quantum Jump

Whether their union is effected by coaxial cable, or by other transmission systems, computers and telecommunications are, if not yet fully married, coming closer. The implications of that union made the British scientific jounalist, Nigel Calder, ask us to:

"Think of a system incorporating the computing, publishing, newspaper, broadcasting and library telephone and postal services of the country, together with large slices of teaching, of government, of industrial and commercial operations and of many professional activities. All these each growing in its own right and subsumed in one system will together outstrip in magnitude and importance any industry or collective activity in which human beings have previously been engaged."[1]

Whatever one calls such a total communications system (Calder christens it 'Technopolis', industrial designer John Tyson gave it the cosier title, 'Alexander' at the Seminar), its effects will be enormous. Ultimately any individual could share a common total (audio, visual, data) communication space with any other and obtain whatever information he needed, when he needed it.

As a result, the shape of our physical environment will change radically. According to Tyson, "housing will be re-organized; we may have such things as an input room, a study room, a family room (for group participation), an output room, a utility room...the basic system terminal will become the lowest common denominator and will be capable of expanding to meet the needs of the user. It is not excessive

(1) Nigel Calder. Technopolis. Social Control of the Uses of Science MacGibbon and Kee, 1969. p. 208.

to say that Alexander becomes the house and the house becomes Alexander."

And there are scores of other imponderables. Tyson raised a number of them - and so defined the thrust of the Seminar as it moved into its second phase: "What is the possibility for individual choice within such a system? What, in this new context, is consensus? How long does consensus last? Who will decide -- if anyone -- what information is allowed into Alexander and what is not?"

More specifically within the Seminar's terms of reference, Tyson asked: Does communication become culture and culture communication? How will the artist create for the new medium? How will he be rewarded?" And, perhaps most important, "What is the role and responsibility of the artist within such a system?"

Not surprisingly, there were almost as many points of view as there were participants. The primary split, however, was between optimists and pessimists: between those who saw "Alexander", or "Technopolis", as an enslaver, and a device which, as one delegate suggested, "would separate man from man" and those who looked on it "as a means of setting people free, of giving man's insatiable curiosity free reign - and allowing him to take more things than ever before out of his environment."

Generally, and perhaps predictably, scientists and engineers were optimistic. As Tyson suggested:

> "We have the choice of alternate futures: the wrong
> Alexander could create an implosion, the right Alexander
> could accelerate us into a future, a quantum jump over
> anything we know now".

And Donald Chisholm, Vice-President of Northern
Electric, backed up this point of view:

> "the problems we face are not in the technology, but
> rather in the wiseness of our choice, in the achievement
> of a benign technology, rather than a regimental or
> polluting one."

How to achieve benignity? Chisholm suggested it was
up to the artist to help the scientist develop what he termed "social
software":

> "The technologists are working now on systems for 1980.
> Generally speaking, their goal is to choose systems that
> are completely in line with society's goals. This is
> often altruistic on the part of engineers and scientists
> but even the most hardnosed "business is business" man
> knows that his survival depends on his choosing within
> the range of what society will vote for. He needs and
> wants all the help society can give."

But what kind of help, and from whom? Chisholm and Tyson,
and the other communications engineers and scientists presented a
challenge of awesome dimensions: a quantum jump in technology, already
underway and irreversibly so, with its concomittant effect upon society;
and riding uncertain herd upon that revolution, technologists asking
help in deciding what social goals and needs they should seek to serve.

Challenged to be precise in their answers, the artists
could not be, for while engineers can predict, artists can only guess,
and guess by intuition rather than by objective reasoning. Taking
one workshop report as a rough reflection of the general problem, it
seems that the artist-as-politician or artist-as-social commentator,
doesn't really know what to suggest:

> "It was pointed out that in any period, the serious
> artist wants to present society with a working model
> of itself. At one time, static art works - portrait
> painting for instance - served this purpose. Now, new
> models are needed. But it was not easy, the group
> found, to say what these were precisely. The artists

present apparently were not helped by the technologist who pointed out that he could build whatever is wanted - and provide it economically - if the demand is sufficient.

The discussion pointed up the irony of not knowing what we want at a time when technology can give us a choice between alternatives. Maybe we need a great project, somebody suggested. Medieval man had his cathedral to build. Maybe the wired city is our cathedral. The essential difference though, is that medieval man could see all the implications of this actions, while we can't."

Another group picked up the same theme:

"The artist must be involved in the design of the system of the wired city. Otherwise a system will be built without the slightest concern for the human ends to which it can be applied. It will be built solely because it is technically feasible."

Art and Alexander

When it came to the direct effects of 'Alexander' on
existing art forms, opinions were equally diverse and uncertain. Some part-
icipants thought the performing arts in particular could not endure, and saw,
Glenn Gould's thesis of the "exploding concert hall" as a clear portent
for the future. One of them suggested:

> "We're already asking ourselves, why go to hear the
> Toronto Symphony play, say, Mahler's 5th, when we have
> the definitive version at home on record. Take this a
> step further. When demand broadcasting is a reality,
> when you have say, Olivier's Hamlet or Welles' Falstaff
> at your beck and call more or less for free, why go to
> the theatre?"

Others were more cheerful:

> "People don't go to a play or a concert just to hear
> the music or watch the actors. It's a community
> experience - a kind of way of recreating the community -
> and people won't lose this instinct."

There was speculation too that the telecommunications-
computer marriage may create new forms of communication even as it changes
existing ones:

> "At present, none of our communications systems involve
> more than two senses at once. Perhaps because of this,
> telecommunications has in a way sensitized people to the
> knowledge that they can't communicate. They're starting
> to realize that there's a real art to being human in this
> society. To find a form for itself, the art of being
> human may demand new systems, which include, say, tactile
> sensations as well as visual and auditory."

As for the individual artist, the most cogent comments -
if scarcely the most optimistic - came from director-playwright
Jacques Languirand. Traditionally, he said, it has been the artist's
function "to communicate to us the image of the world we live in...
But, thanks to telecommunications, the work of art appears suddenly

marginal, out of touch with reality, at least for those artists
who are aware of living in a technological revolution."

Faced with this situation, Languirand said artists
tend to react in a number of ways.

"For some, protest becomes the major form of expression,
I would even say, the major work. At last, the wish of
the surrealists is being fulfilled: art no longer exists.

On the other hand, it is evident too, that some artists
have decided to express themselves within the system,
giving up the idea of art for art's sake...For these
artists, the design of a utilitarian object, for instance,
is just as important as the creation of a painting or
scupture.

In both cases, it is negation of art, at least in the
sense of the traditional definition.

Some artists are ready to undertake any experiment...
Like Prometheus, they want to bring fire to mankind:
thus they will experiment with LSD and/or political
commitment, as well as new materials, and/or the new
tools of technology.

Other artists are apprehensive about the new media...they
see their role as basically one of preserving some
permanent values, or what they consider to be permanent
values. This attitude...might explain why, as McLuhan
points out, "Artists are always one technology behind."

Few people suggested Languirand, are really aware of
the part the computer could eventually play in artistic creation.
To begin with, a new medium is generally used as a vehicle for
old forms. When talking pictures were first invented, it was
reassuring to believe that they would make it possible to
screen plays and operas. Certain artistic circles have always
hoped that the definition of art would remain the same. So, when we
talk about computers and the graphic arts, some artists will ask if
this new technology will let them draw "like Al Capp, Beardsley or
Disney." Whereas the computer will not only impose a style, but
will drastically change the very notion of graphic art.

There are people "who would not dare acknowledge the unbelievable part the computer will be called upon to play in the arts, probably because this will lead to a questioning of all artistic values, and, specifically, of the artist's own role." Nonetheless, the creative process will undergo drastic change.

It is generally recognized, Languirand stated, that "creation proceeds in two stages: addition, followed by subtraction." In the first stage, the artist accumulates information, and gives it rough shape; in the second stage, he selects the various elements he needs, and puts them in order.

> "The computer can contribute to the creation in its first stage; it has the faculty of creating almost unlimited sequences, for instance an almost infinite number of variations on a musical theme and every conceivable transposition on the different modes".

The artist does not really intervene until the second, and selective stage of the process. But when a computer is used, the two steps of the creative process become "almost simultaneous," in actual practice.

> "Contrary to common belief, this form of creation is very exacting for the artist: it requires a power of abstraction at concept level; it also requires a very strong personality, able to judge the true value of the elements suggested by the computer, and to resist the fascination of change; it requires, too, a non-linear mind, a mind trained in synthesis.

> But the computer itself will never be genuinely "creative", even though it proceeds by analogy: bit binary operation (within the philosophical as well as the technological meaning) renders it passive while man proceeds from the ternary (the "yes or no" of the computer, against the "yes and no" of Pythagoras)."

But there is a real problem for the artist, nonetheless, because "man tends to resemble the machines he invents." As fashion testifies,

the "boiler hat" was a by-product of the age of steam. "Like the hero of the younger generation, Mr. Spock in "Star Trek", who is always logical and never emotional, man will tend to become integrated, determined, programmed."

At this point in Languirand's presentation, participants nodded an uneasy assent. One whispered to his neighbour, "It's already happening. Look at the craze for speed-reading, for cramming information into our storage system, without regard for content let alone for style."

TWO CULTURES

Participatory Technocracy

Our real problem lies in the use we make of communications technology, and not in the hardware itself. Both Languirand and Chisholm were agreed on that. But when Chisholm, the engineer, asked for guidance in developing technology to suit social goals, he implied that public participation was possible. Languirand was not at all sure that it was:

> "When we talk about democratic participation in relation to telecommunications, it is my impression that we are deluding ourselves. I myself share the opinion Professor Léon Dion expressed recently in a seminar (1): "It seems that telecommunications promote a demago-technocratic type of political system"...Participation is a delusion, unless it is interpreted merely as "feedback".
>
> The process consists of launching an idea, trying it out on the masses, as is often done in politics, not in order to find out whether the idea is worthwhile, but whether the masses are ready to accept it. Thus the function of telecommunications will be to prepare the masses to accept an idea considered valid by the technocrats."

Where does this leave the artist, the "traditional reflector of the society in which he lives"? As Languirand saw it: the artist will have two options: to contest the system, or to promote the "happiness" of the masses.

In either case, the artist really works for the system. If he contests it, the most he can hope for is a modification

(1) Telecommunications and Participation, University of Montreal, April 1970.

of strategy and policies, but never of power. And contestation
can be a form of exorcism or catharsis, useful for channelling -
and neutralizing - negative forces. "Under the Roman Empire, slaves
had the right to make fun of their masters one day a year, which in
the final analysis, helped to maintain order."

Contributing to the "happiness" of the masses means
conditioning them, Languirand said. Although it appears as "a betrayal
of the very vocation of the artist", telecommunications have already
helped to define his work in this way. "The system, in fact, can give
him access to the "hardware" only insofar as it can count upon the
artist to use it for positive aims, on the terms of the system."

Within the system, Languirand said, the artist becomes
a tool used to supply "games, distractions, outlets....Aldous Huxley's
prediction in his novel "Brave New World" is already coming true. We
are no longer very far from the creation of the College of Emotional
Engineering."

After Languirand had given his artist's eye-view of
the world of total communications, film-maker and novelist Jacques
Godbout began almost precisely where Languirand left off, with the
effects of total communications on society in general. His paper,
The Telecommission is a Diversion Enterprise, constituted a warning
and a plea. A warning that telecommunications will almost inevitably
become the preserve of a technocratic elite, who will use it to re-
inforce their own power. A plea that the management of telecommunications
be "entrusted to creators and one day, as soon as possible, open to all."

Communication vs Information

A vital distinction was drawn by Jacques Godbout between communication and the mere distribution of information:

"By communication, I understand the pooling of objects, ideas or connotations. The man who offers a cigarette and a light communicates. The one who sends a telex does not communicate, he informs. The field of information, strictly speaking, is that of technology... it is not that of culture. Now the first danger of the Telecommission lies in this catchall word: tele-communication."

Godbout distinguished between telecommunication, tele-broadcasting and teleinformation. Telecommunication, he said, uses electronic techniques to enlarge man's "spiritual field by pooling human connotations." Telebroadcasting accidentally serves the communication process by transmitting existing art forms; music on radio was an example. Teleinformation means the transmission of data by electronic means.

Information, Godbout declared, is neither communications nor art. It is the people in the information field who would like to see artists "submit to an apprenticeship" in the new technology. "A more rational and more efficient use of artists" would give them control not only of artists but of those minds which are still beyond the reach of "the computer's tentacles".

Already a whole sector of industry - advertizing - has succeeded in making artists invert their art by using "the trappings of humanist communication" to make the consumer react and obey.

In Godbout's opinion, "the economic technological dictatorship" depends on the "concentration, conservation and rational dissemination" of knowledge. "When an information technocrat holds

between his thumb and forefinger a holographic crystal[1] containing

one hundred layers of visual information, his mouth waters like a

nymphomaniac in a military college."

But, Godbout continued - and it is an important

"but" - culture, cultural institutions and the human sciences do not

belong in the world of "knowledge". He forecast that "the magician

technician will try to transform the museum into a place of knowledge,

forgetting that the very nature of the museum is to favour contemplation

and reflection."

To artists, and to others in related fields - "writers,

sociologists, anthropologists" - 'how to know' is less important than

'how to live'.

How are the humanists to prevail over the technocrats?

Godbout's solution involved substituting one dictatorship for another:

> "The impact of "telecommunications" on cultural organizations
> or on institutions will depend upon the type of dictatorship
> in which we shall live. It is obvious that today the sole
> objective of an intellectual must be to replace the economic-
> technological dictatorship by a humanist dictatorship, in
> short, a cultural revolution...The Telecommission cannot
> propose a cultural revolution: it is a creation of the
> economic-technological complex. But it could avoid the
> worst, that is, choose the reformist road and advise the
> Government to give existing institutions sufficient funds
> so that they can blossom and transform the human environment,
> extending the field of consciousness."

(1) Laser-generated crystals can store the equivalent of 1,000
    book pages in a crystal the size of a postage stamp.

To avoid "an armed struggle for ownership of the
tools of creation, telecommunications included", Godbout advised:

> "The only real solution lies in collective ownership,
> co-managed by artists, as the hospital is a collective
> ownership, co-managed by doctors and public administrators...
> It will not be sufficient to plug in artists in front of
> electronic machines, or to place into orbit satellites
> with poetic names."

BRIDGING THE GAP

Striking a Balance

Perhaps because the future they sketched was scarely more cheerful than a canvas by Hieronymous Bosch, the presentations of Languirand and of Godbout acted as a catalyst for the Seminar. To this point discussion had consisted primarily, as Lister Sinclair phrased it, "of a mixture of gossip and psychotherapy."

The artists having had their say, and in the process seemingly arrogated the right to speak for all society, a kind of creative tension now developed. The scientists and engineers, exasperated, lashed back, with comments like these:

> "Artists and academics think they're the only ones who are sensitive to the needs of society...they're driven by a compulsion to tell the world what they are doing and thinking. We may work for profit-oriented organizations, but as individuals our day to day objective is to create technology which will meet social needs..."

> "Artists are so overwhelmed by the negative aspects that they forget the challenge - the new artistic challenge - to present cohesively and constructively the monumental contemporary scope, life, promise and hazard in both science and technology..."

> "I get the feeling that everyone is talking - and no one is listening..."

And out of this tension, came a new sense of purpose. "We took our labels off", one participant explained, "and realized that certain problems in our contemporary, technologically-dominated life are too large for either Science or Art to deal with alone; that the possibility of collaboration between certain artists and scientists was incredibly rich and urgent." Which brought the meeting full circle,

to the point which Kepes had made at the beginning.

This time it was Lister Sinclair who set the mood.

"We need to strike a balance between the romantic point
of view, and the classical point of view. The Romantic
sees the purpose of art as self-expression - holding a
mirror up to nature. The Classic sees art as communication -
its prime function to help us enjoy life and to endure it."

In their own way, and at their own pace, each of the
six workshop groups set out to strike this balance between the natural
sciences and the social sciences, between romance and classicism. Some
were kinetic in their approach, engaging as one workshop chairman put it
"in the problems of diagnosis"; others were static. Yet - and this
became clear during the closing plenary session - each of them dealt
with essentially the same problems and came up with broadly similar
solutions.

As far as the problems were concerned, two emerged as
paramount: the need to open up - or to democratize - both arts and
technology ("Bring the outside in - put the inside on", one participant
suggested), and the related need to do this, not just in major centres,
but all across the country. Properly used, telecommunications was the
answer in both cases, it was generally agreed. As one group expressed it:

"Since we are all creators in some sense, if not in the
traditional way, the group asserted the need for a
telecommunications system that would develop those
creative urges moving within the country and give
opportunity for creative expression to as many people
as possible. The visual contact made possible by
telecommunications would allow artists to learn what
their colleagues were doing, seeing and experimenting
with elsewhere, as well as allowing their exchanges to
be shared with the general public.

"Telecommunications might then become the link between
artist and audience, thereby alleviating the artificial

distinction between one as producer, and the other as
consumer."

And another:

"We believe that the substance of programming, or the
telecommunication software, must receive at least
equal consideration (and simultaneous consideration)
with the hardware. We want study, research, and support
for preparation and production of software even in
advance of hardware capacities...We want the communica-
tions network to be primarily for, by and about Canadian
society and this country. We say this not in a chauvin-
istic sense, but because we believe in developing the
resources we already have...We further want the tele-
communications system to strive to rectify the cultural
and media disparities of this country. This means
regional production and regional programming. We believe
that the concentration of artists in major centres
deprives artists and public alike of fruitful direction..."

Groping for a Structure

How though to bend the telecommunications system to fit these ends? All groups were agreed that existing arts institutions and organizations - national, provincial and private - would play an important part. As one report put it:

> "We believe that these institutions will willingly and eagerly co-operate and contribute to the technological development of new forms of art diffusion...thus the importance of developing these institutions must be recognized."

But it was evident at the same time that the Seminar was also "groping for a new kind of structure," to use the phrase of the chairman of the plenary session, James Domville. As one participant explained:

> "Existing institutions, set up for another time and another set of circumstances, are not really equipped to cope with the total dimension of total communications. Moreover, many of them are too specialized to allow dynamic interaction between artists, technologists and the public as a whole. In short, scientists and artists have to have a structure in order to get to another."

The prime functions of such a structure were relatively easily defined. Research and Experiment were the operative words, and, as Domville pointed out in his summary of the workshop reports:

> "You're thinking in terms of a multi-disciplinary approach, and you want the structure to be as autonomous as possible. You're concerned about the need for access to the new technology, and you relate this to your requests for networks of experimental and research centres. You're concerned about access to information, which relates to the question of data banks and information retrieval systems. You're worried about the waste of existing resources, which has come about as a result of the compartmentalization of existing institutions. Perhaps most of all, you're

concerned about the social impact of total communications. You're in effect asking the government not only to be responsive, but to be responsible - to go out and seek what the citizen really wants and needs."

It was less easy, however, to decide how such a structure should be organized. One group saw it:

"As a continuing consortium made up of representatives from the arts, industry and government to act as a kind of advisory body to government, perhaps structured along the lines of the Hudson Institute, or taking a model closer to home, the Economic Council of Canada."

Another suggested:

"It should be a Crown Corporation Think Tank." But then added "There was, however, marked reluctance to put the new body too close to government...it must be made clear that it is something new and not an extension of any current mandate."

It must not be a rigid, bureaucratic structure:

"We need to construct a floating framework in time. Let's have no 20-year plans, or institutions whose mandates are too narrow to encompass new developments."

Indeed, for some participants, the very word 'institution' sent shivers down the spine. As one young artist expressed it:

"Institutions frighten me. Systems work. Synergistic communities are to be sought after and are possible. Institutions seem to sour as they grow, no longer seeking whatever goal gave course to their being; they seem to function only to maintain their own growth and existence. What we don't need is another purveyor of another segment of our consciousness...What we need instead is a system, a plan, a method of allowing each community to construct a network suitable for its own purposes and needs. Because all communities would use a standard system, inter-communications will be possible... If for some bureaucratic expedience, a god-given guiding hand is requisite to govern the growth pattern of these autonomous yet symbiotic systems, then 'let it be'. Have an organization with all the sundry official paraphernalia ...but place a termination date on each position. In

other words, if a governing body is needed to control
some grouping of systems, then form it with all its
organizational trappings and the day that it is instated,
proclaim the day of its dissolution..."

There were those also who proposed a kind of "anti-system".
As Sterling Beckwith, Head of the Music Department of York University
suggested:

"Artists are still what they always were - specialists
in the magical and stimulators of the human imagination.
perhaps then the art techno-structure should provide a
counterbalance, an alternative system to the technocratic
norm...an open matrix for the training of artists and
para-artists...a place where scientists can begin the
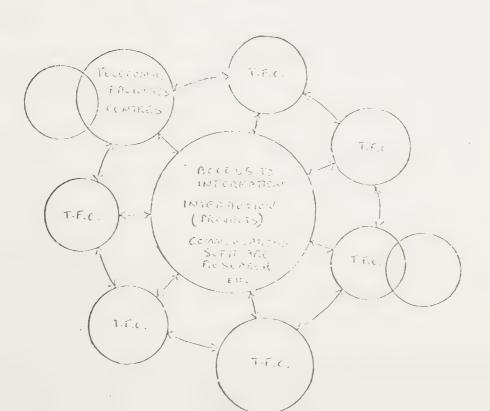task of studying the art process."

In Beckwith's opinion, a university might provide the
best foundation. Most participants, however, were more inclined to
look, albeit with reservations, to Government.

Creative Communications Centre

One workshop went a good deal further than the others
in defining the shape of the new system. Its proposal was for a
biomorphic organization combined with a telecommunications network,
to be known as a Creative Communications Centre. The description of
the centre which follows, and which can perhaps serve as a model for
future discussions, is drawn from two sources: the report of the work-
shop itself and an afterword contributed by one of its members, Michael
Goldberg.

> "Because cultural development is random, it's impossible
> for government to apply to it the standard sequential
> pattern of decision-action-result. At the same time,
> cultural development requires protective nurturing and
> support...government might best provide this support by
> establishing a kind of 'life-systems model' - with a
> central nucleus, and with feelers, or outer cells, which
> probe into and retract from society. Management by
> government, however, would be so minimal as to allow
> maximum growth without restrictive control. One suggestion
> was that the model be structured and financed independently,
> in the same way as the Canada Council."

The first step is to convene a 'critical mass' of people - artists, scientists, sociologists and private citizens - to form the sensory centre of the system.

This central organization must be very flexible, and sensitive to human needs. It might pay artists just to be around as a sensitizing influence, giving them absolute freedom.[1] A prime concern should be the opening up of communications facilities. The organization should encourage the CBC, NFB, etc., to allow their creators more freedom of expression. It should offer particular encouragement to programs like the NFB's "Challenge for Change".

The outer-cells, the life-giving nodes of the model, would comprise easily accessible telecommunications facility centres. They would not serve their purpose if they were used merely to link universities and musuems. Ideally, members of the community should be able to use them spontaneously, through groups like artists' associations, performing arts groups and so on.

As well as facilities for individual and collaborative experiment, information storage and retrieval systems should be provided for artists and social scientists, to supplement the systems now available for the applied and pure sciences.

Each centre would be in communication with the others, and with the central nucleus. Telex would be the obvious link. The possibility of using the CBC-Bell link (either off hours, or using the

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(1) This method has worked so well at Bell Telephone Laboratories at Murray Hill, New Jersey, that E.A.T. is constantly being asked by U.S. industry to provide artists in residence.

standby system) should be explored. Each centre should also be equipped with several VTR Portaback links.

Administratively, the whole structure of the model should be so loose that obsolete centres could be chopped off - and new ones added. It would, in the last analysis, depend on an acceptance by government that human and social values cannot be served by buildings or by reports.

Other Suggestions

While proposals for some type of creative communications
centre or system emerged as the prime recommendation of the Seminar,
there were many other, more direct suggestions. Some, of course,
have been dealt with earlier in this report. Not surprisingly,
others had to do with television broadcasting - for it is in this
field, as Leiterman remarked, that "the future is already upon us."

The workshops lamented, unanimously, the paucity of time
allotted to programming about arts and science. One suggestion, made
by Michael Goldberg, called for a new national arts program devised by
artists themselves. "Audio-visual and TV technology experiments,
original teleplays, happenings, films made especially for the programme,
interviews of special interest to the public, features on artists at
work are just a few of the possibilities."

Douglas Leiterman set out a four-point plan for broadcast-
ing which called for an entirely new approach to both management and
programming:

(1) "Install at the top a few key men and women who
have demonstrated skill and taste for controversial
broadcasting... men and women who believe that a
free society works best by encouraging diversity
of view-point, even in the most sensitive areas;

(2) Ensure that a majority of the boards of directors
and the backers of the stations are persons who
share these fundamental objectives;

(3) Involve the people of the community...if (they are)
educated in what is at stake, and given a real part
in the planning, a working majority will identify
themselves with the program and use the impetus of
TV to innovate or emergize community dialogue at
every level;

(4) Seek diversity of staff and give them participation
     in programming. I have found the tangential pull
     of staff members of diverse ethnic, philosophical,
     political, economic and geographic backgrounds a
     valuable counter-thrust to single-pole programming."

Participatory Broadcasting

Werner Aellen went several steps further than Leiterman when he called for "participatory broadcasting".

"What made the explosive development of multi-media and film possible was the access to equipment and materials by a greater number of people. This kind of development must be encouraged also in the case of video; we have to demystify TV."

Programming today is all but moribund, said Aellen:

"The present system where a person in charge of a certain program is not personally involved in the subject matter but merely assigned to a job, invariably leads to one-dimensional treatment of subject matter. If, on the other hand, people (teachers, scientists, artists, tenants, etc.) were given the opportunity to shape their own expressions and formulate a first-hand presentation on the subject of their involvement rather than having it filtered or produced by another person, a genuine intensity can be conveyed."

Technical expertise and access to equipment will eventually become available to larger numbers of people, Aellen maintained. The new, compact CTR equipment has already changed the form of video recording and will "eventually affect TV content and treatment drastically." At present, such miniaturized equipment is plagued with technical problems. But if it were government policy to encourage cable TV operators to make some of their facilities available for experimental purposes, manufacturers would iron out these bugs in short order.

The Seminar as a whole shared Aellen's view. One workshop related participation to education, where, it said, television could provide "a first-hand source of creative activity. Children and students should use cameras and see artists at work using cameras..."

Once Cable TV - in theory, anyway - frees programming from the Procrustean Bed of the 30 minute time slot, a new approach will be possible, Aellen predicted. Using a series of short films as illustrations, he suggested that before long broadcasters will be able to experiment with different forms of time: compressed time, warped time, expanded time, instead of the dramatic time which television shows us almost exclusively, today. Dramatic time "not only gives us a manipulated and grossly distorted view of our society, but deprives us of the opportunity to re-sensitize ourselves to our environment, be it nature or man-made surroundings."

To explore these new areas, Aellen called for a model demand-broadcasting system: "We should set one up and test it. We must find out whether participatory broadcasting can be effected with personalized radar set systems for house-to-house closed circuit TV...!"

Using the Resources We Already Have

The more visionary proposals at the Seminar were balanced by a general concern with making better use of <u>existing</u> resources. It was suggested, for instance, that institutions such as the Canada Council, the CBC, and the NFB make greater efforts to collaborate.

Taking his own institution as an example, Peter Swan said the Royal Ontario Museum had only "random opportunities" to take advantage of the possibilities of television and film:

> "The museum should have its own department doing nothing but TV, which can be used for creating imaginative programs, which integrate all the arts, both visual and performing...Given adequate long-term backing, three or four audiovisual units might be set up across the country. Each could produce programmes for distribution to other centres...a list of 100 programmes should be drawn up and their costs and effective achievement scheduled."

Again in terms of the proper use of existing resources, one participant proposed:

> "Technology implies a change, not only in the arts themselves, but in the ways in which artists are rewarded. But as matters stand now, our reward system - our copyright regulations, reproduction rights and so on - are built on the old property law. Existing institutions and government departments have a responsibility to do something about this."

Perhaps the most interesting suggestion had to do with using the artist himself as a resource. One workshop report suggested:

> "Government departments should hire artists as consultants. Not in the sense of waiting for the artist to come up with a project, examining it, and giving reluctant agreement. The artist should be hired for his potential - for the ideas he can bring to bear on policy."

TOWARDS THE KIND OF SOCIETY WE WANT TO LIVE IN

The objective of the Telecommunications Environment section of the Telecommission, of which the Telecommunications and the Arts Seminar was part, was, as all participants were informed, "to define the right questions and to suggest ways in which the right answers could be achieved, rather than to recommend precise answers."

First Principles

1.   That the Telecommission make a telecommitment to the arts and to what the arts stand for - in their social as well as aesthetic dimensions. We believe that the arts through technology, and the arts of technology will not only describe but will move us towards the kind of society we want to live in. In the process, extraordinary steps must be taken.

2.   That unless telecommunications technology is developed and controlled for social purposes it will become, almost inevitably, the preserve of a technocratic elite. Telecommunications should be opened up to allow all citizens to communicate freely among themselves.

3.   That telecommunications software (including both pro-gramming and an assessment of the environmental impact of hardware developments) receive as much consideration - and simultaneous consideration - as telecommunications hardware. This implies study, research and support for the preparation and production of software "even in advance of hardware."

4.   That the Communications network be primarily for, by
      and about Canadian society and this country. This does
      not imply narrow nationalism; instead it reflects an
      urgent concern to rectify the cultural and media disparities
      of this country. And since the concentration of artists
      in major centre deprives artists and public alike of
      fruitful direction and collaboration, it implies also
      regional production and regional programming.

5.   That the hardware and software already within the
      community deserve a higher and more urgent priority
      than new hardware. Existing intra-community links are
      not yet fully exploited.

RECOMMENDATIONS

To put these principles into practice, the Seminar
recommended:

1. The formation of some type of creative communications
    centre/system, or network of centres/systems, designed as
    laboratories for research and experiment by artists and
    scientists and, equally important, as a means of giving
    opportunity for creative expression through telecommunications
    to as many people as possible. (For a detailed discussion
    of this proposal, see pages 50 - 52).

2. The development of a national information retrieval system for the arts.
    As a first step, support is needed for the establishment of
    information service facilities in all major centres. These
    retrieval systems would make the best possible use of
    equipment and resources which already exist and, it goes
    almost without saying, they would depend on the co-operation
    of universities, museums and galleries, industries, provincial
    and local governments and related public and private
    institutions and organizations. In developing such systems,
    particular attention must be paid to the way information is
    selected, and to the method and level of access.

3.   <u>That, at the same time, government recognize also the</u>

<u>importance of developing the existing federal cultural</u>

<u>agencies, and cultural organizations and institutions,</u>

<u>public and private across the country</u>. And in particular:

- that such federal agencies as the Canada Council,
  the CBC and NFB make much greater efforts to
  collaborate, particularly in terms of the develop-
  ment of an integrated and positive programme which
  anticipates the new technology;

- that these organizations study the possibility of
  devoting 5 per cent or 6 per cent of their annual
  budgets to research and experiment in the applica-
  tion of the new technology to the arts. This
  amount should be matched by the Department of
  Communications in complementary activities in the
  field of the arts;

- that the possibility of an inter-museum communica-
  tions network, primarily designed for practising
  artists, be studied.

Education

4.   That, as a means of democratizing the arts, and developing
        creative forces within the country, a massive program of
        education be undertaken in the use and application of the
        new technology.

                Such an education might entail --
- emphasis on the importance of audio-visual and other
technological devices at all levels of education, not only
as a means of increasing information and appreciation, but
also as a first-hand source of creative activity.
- scholarships from the Canada Council and other organizations
for artists to experiment with television and other media
equipment.
- developing multiple uses for communications software.
Software producers should be encouraged to work closely with
book publishers, film producers, museums, cinémathèques.

Artists and Computers

                Education is especially relevant for artists wishing
to work with computers. (For a detailed discussion of this problem see
pages 17 - 22). The Seminar recommended:

5.   that artists who wish to use computers join forces and make
        joint proposals to major computer organizations.

6. that government instruct those of its departments and
   agencies which have computers to reserve part of their
   computer capacity for experiment by artists.

Television Broadcasting

7. that government policy make access to cable TV
   facilities a matter of course for artists rather than
   of competition;

8. that all broadcasters (radio and TV) in Canada include
   in their current information programs news concerning
   arts, science, technology, and education rather than
   assigning such material to artistic and scientific
   ghettos;

9. that the CRTC study the possibility of compelling all
   broadcasting systems to provide minimum percentages of
   experimental programming;

10. that a technical broadcast standards bureau be established,
    attached to the CRTC. Such a bureau would be responsible
    for ensuring that the sound and picture quality of artistic
    programming (e.g. symphony concerts, ballet) meets certain
    accepted minimum standards;

11. that the CBC be encouraged to plan a new national arts
    program, to be broadcast in prime time, to be devised
    by artists themselves;

12.   that a much greater number of people be given access
       to TV equipment, and thereby an opportunity to shape
       their own expressions and acquire through experiment
       new competence in the use of telecommunications to
       deal with today's complex social issues;

13.   that the possibility of establishing an experimental
       demand-broadcasting system be studied.

Other Suggestions

1.   that Government departments, as a matter of policy
      hire artists as consultants;

2.   that relevant institutions, and relevant government
      departments study the present rewards system (e.g. copy-
      right regulations, reproduction rights, etc.) to see how
      these might be changed to meet changing circumstances;

3.   that the NFB, and other relevant agencies, study the
      possibility of organizing a touring, all-Canadian film
      festival.

APPENDIX "A"

TELECOMMUNICATIONS AND THE ARTS

Seminar Objectives

The purpose of the Seminar is to evaluate the growing impact of advanced telecommunications technology on the arts in Canada, and to make policy recommendations for consideration by governments, arts administrators, educators, and industry.

The Seminar will examine telecommunications technology as it relates to:

(a) the creative work of painters, sculptors, stage and museum-display designers, writers, dramatists, composers, choreographers, multi-media artists, and film and television directors;

(b) the interpretation and projection of the arts by museums and art galleries; theatre, ballet, and opera companies; orchestras and musicians; multi-media arts organizations; and film and television productions;

(c) the enjoyment of the arts by the public, with special attention to the use of telecommunications to make the arts available to much wider audiences.

The Seminar will take the form of four consecutive panel discussions of distinct but not mutually exclusive aspects of the problem, followed by a concluding plenary session.

Panel 1 - New Forms of Expression and Interpretation

What can artists do, using the new telecommunications technology, that they could not do before? Will multi-media forms of expression supplement, complement, or supersede conventional art forms?

Panel 2 - The Individual Artist

What does the individual artist need to live with and benefit from the new technology? What should be done by governments, grant-giving bodies, arts educators, and industry to provide the necessary tools, training, and access to information?

APPENDIX "A"

Seminar Chairman: R. Gwyn, Department of Communications

Plenary Session Chairman: James Domville,
                          Théâtre du Nouveau Monde

Panellists:

1. New Forms of Expression

    J. Domville, Théâtre du Nouveau Monde (Chairman)
    Werner Aellen, Intermedia, Vancouver
    Charles Gagnon, Loyola University, Montreal
    Pierre Garneau, Radio Canada
    Leslie Mezei, University of Toronto

2. The Individual Artist

    Joe Green, York University (Chairman)
    Don Chisholm, Northern Electric*
    François Dallegret, Artist, Montreal*
    Mike Goldberg, Artist, Montreal*

3. Arts Organizations

    Vincent Tovell, CBC (Chairman)
    Jacques Godbout, NFB, Montreal*
    Robert Sterling Beckwith, York University
    Jacques Languirand, Director-Playwright, Montreal*
    Peter Swan, Royal Ontario Museum*

4. The Arts and the Public

    Marcel Rioux, University of Montreal (Chairman)
    Norman Hay, Interdesign, Toronto
    John Tyson, Northern Electric*
    Douglas Leiterman, TV Film Producer, Toronto
    Glen McInnes, Alphatext, Ottawa*

Technical Briefing: G. Bergeron, Department of Communications
                     J. De Mercado, Department of Communications
                     R. Mason, IBM Canada

Workshop Chairmen: Robert Sterling Beckwith, York University
                     G. Bergeron, Department of Communications
                     D. Cappon, York University
                     A. Fortier, Secretary of State
                     D. Hilton, Department of Communications
                     D. Silcox, Canada Council

* Position paper available on request

Panel 3 - Arts Organizations

What can be done to ensure that established and new arts organizations (museums, performing companies, film-makers, broadcasters) are intellectually and technically equipped to take advantage of the new technology? What research is needed, and what benefits can they derive from advanced information systems? Are new physical and conceptual structures required, or should new priorities be molded into existing structures?

Panel 4 - The Arts and the Public

How can the new technology be used to project the arts to much wider audiences? What beneficial effects can be induced in relation to the extension services of museums and libraries, and the touring of performing groups? How can telecommunications be used by educators to generate a wider appreciation of the arts by the public in general and by the rising generations in particular?

TELECOMMISSION

STUDY 6(d)

SEMINAR ON THE WIRED CITY

University of Ottawa - June 26,27,28, 1970

This is a Report on the Seminar and does not
necessarily represent the views of the Department or of the
federal Government. No commitment for future action should
be inferred from the recommendations of the participants.

This Report is to be considered as a background
working paper and no effort has been made to edit it for
uniformity of terminology with other studies.

TABLE OF CONTENTS

Introduction: The How and the Why

"IN GENERAL, TO DETERMINE HOW ADVANCED TELECOMMUNICATIONS TECHNOLOGY CAN BE USED TO MEET THE NEEDS OF CITIES AND HOW SUCH TECHNOLOGY WILL SHAPE THE NEEDS OF CITIES; AND IN PARTICULAR TO CONSIDER THE DESIRABILITY, FEASIBILITY AND POSSIBLE SCOPE OF PROPOSALS FOR A WIRED CITY PILOT PROJECT INVOLVING GOVERNMENT, INDUSTRY, AND UNIVERSITY PARTICIPATION": From the objectives of the Seminar on the "Wired City".

There is some argument whether or not the term "Wired City" is a useful one and more argument about what it means. The origin of the term is unknown (certainly, no poet coined it) and its principal value seems to be that it has passed into common usage.

Obviously, all cities now are wired. Indeed, looking at the tangle of overhead spaghetti that disfigures urban landscapes, most seem to be overwired. "Wired City" clearly means much more than this. It means a quantum jump in communications technology - and a corresponding change in the social environment. It means, in practical terms, communications systems so complex and sophisticated that children can be educated at home, housewives can shop at home and businessmen, even if they do not work at home, can conduct their business via videophone, closed-circuit television or high-speed data links. For computerized information utilities are an integral part of the city of the post-industrial society.

As for the technology which will bring this about, some aspects will involve actual wires (as in the case of cable systems designed to provide upwards of 60 TV channels and two-way audio-visual communications).

Other - like lasers and satellites - will not. And some forms of communication like home video machines will not use telecommunicatons links at all.

This was the kind of "Wired City" considered by the 120 delegates who attended a three-day Seminar held in mid-June at the University of Ottawa, sponsored jointly by the Department of Communications, the Ministry of Transport and the Central Mortgage and Housing Corporation as part of the Telecommission. Participants examined not an existing city - or an existing system - but rather a series of probable models for future communities and their systems of communications. "Future", it is important to note, was defined as being 10 to 15 years from now. Equally important was the question of feasibility: Could the

various models be built? And for what purpose? And if built, either as part of a rational plan or as a blind response to commercial and technological forces, what would be their social and environmental impact?

The Architecture   -   Cable and Telephone

The basic components of the Wired City have been with us for some time. In fact, Canada has one of the best-developed communications systems in the world. There are two principal elements: 1) a switched telecommunications network connecting some 9 million telephone subscribers from Newfoundland to Vancouver Island, and used for many purposes besides voice traffic: TWX, Telex, telegraphs, data-transmission and a limited amount of facsimile reproduction; and 2) a broadband cable system (CATV) reaching over one-quarter of all urban Canadian households[1] and ultimately capable of bringing 25 and more channels of color TV into the average home. The rapidly-spreading CATV systems are also "broadcasters" in the sense that everything -- information or 'noise' -- in the system flows one way: from the operators' antennas or studios to the subscribers' TV sets.

Postulate now that the flexibility of the two-way switched telephone network could be integrated with the massive broadband capacity of the coaxial cable network. The effect would be to give each household a 'total communications' capacity. And this, it was argued at the Seminar, is technically possible.

In fact several elements of the "Wired City" already exist.   Tele-shopping is now a reality -- in San Diego, California. In the next few years videophones will come on the market in Canada and home video recorder/playback machines were due to go on sale before the end of 1970.   National data banks are already being planned.   In fact, one of the most advanced banking information systems in the world - the interactive system of the Bank of Montreal which will link central computer processing facilities and automated storage files to terminals in all 1,000 branches - is due to be completed within the next five years.

It is true, of course, that, as yet, neither existing cable systems nor the Bank of Montreal project meet all the requirements of a true wired city. Though the Bank's system will be multiple access design it will be privately owned and used only for the Bank's purposes. And the CATV service available to the general public is heavily restricted: it does not, for example, encompass two-way communication, and CATV operators have not opened up their one-way capacity for use by individuals or the community as a whole. Equally restrictive is the fact that the various CATV systems do not interconnect.

[1] Canadian Radio-Television Commission, Cable Television in Canada, Jan. 1971.

Perhaps it would be realistic to say that we have arrived at the outskirts of the wired city. But simply to point out that the technology like Everest, is <u>there</u>, that it is already being used to some degree, and therefore total communications is inevitable, is to miss the whole point of the Seminar.

But the Wired City -- with its total communications capacity -- is <u>not</u> simply a technological concept, or even an economic concept - although every new service, from tele-mail to video-phone, will have to prove its worth in the market place. Above all, the Wired City has a critical social dimension. If knowledge is power, then making information available in massive quantities to all citizens by way of individualized two-way information systems - demand television; information retrieval; computer-aided instruction - could effect a major change in the power structure. And then again, what would be the social effects if - as more than one delegate posited - the concept of separating hardware owners from software - or program - producers become accepted? Certainly, programmers would have much greater editorial freedom and private individuals would have the opportunity to originate their <u>own</u> programs instead of only receiving those of others. The difference, in a nutshell, is between active participatory democracy and passive participatory democracy.

The Consequences

A major concern of the Seminar was the impact of "total communications" on social, cultural, economic and political structures. Delegates discovered however, that it is not easy to decide how to measure the impact, nor to predict the good and bad consequences, of something which has not yet happened.

While much can be learned from studying the partial systems that already exist, they can provide no more than partial answers. Hence the idea of a pilot "wired city" study which was introduced at the outset. As the Seminar Chairman explained, the project need not involve an actual wired city "set in concrete" with white-collar residents working on their basement terminals and housewives ordering up their week's groceries by a wideband communications system. Instead, some of these studies could be undertaken by computer simulation, and many others could be conducted at different times and places.

Is the Wired City important enough socially, politically and economically, to justify systematic study, before it happens of its own accord? Will such a study enable society to ward off its worst consequences and capitalize on its best features? Should the Government be concerned only with the commercial and

technical efficiency of the system and not with its possible sociological and ecological by-products?

The overwhelming feeling of participants - the majority of whom were sociologists, educators, architects, urban planners and social workers - was that it is essential to develop technology to meet society's social, political, cultural and economic goals, and above all to make certain that the machine liberates man, instead of dominating him. No participant expressed this view more strongly than the keynote speaker, Professor K. Izumi, head of the Human Information and Ecology Program of the University of Saskatchewan at Regina.

The Meaning of Life

"As the inhumanities of man, particularly towards man himself continue unabated, the assorted violence, murder, suicide, riots, war and even genocide and lesser but just as inhumane psychological murders", said Izumi, "some are raising questions which shift our thoughts from our preoccupation with the survival of the species to the survival of individual man himself, to the meaning of life from the means to life."

The line between man's outer and inner environnement "is often indistinguishable, as our scientific colleagues learn more about the psycho-biochemistry of man." But while we can measure man's basic environmental needs, like the amount of food, air and water necessary to sustain life, there are dimensions of man's inner environment which do not appear to be measurable, at least by existing techniques. But some people say these qualities should not be measured, even if it were possible. "These inner environmental qualities of man are his sense of kindness, politeness, tolerance, compassion, reverence for life, in short, that sense of humanity that distinguishes man from the other animals."

"The essential human information on which this enlightenment is based has been acquired through a variety of human experiences in which other human beings were involved in some meaningful way, be it the market place, the theatre, temple or church, school or arena, but where the human experience is a confrontation which permits the infinite varieties of social relationships and behaviour and which is perceived as directly as possible without the adulterating influence of any media...the essential understanding of man stems from that kind of direct communication that requires no media."

Yet the economic, administrative and legal structures which determine man's physical environment are also stratifying and separating man from man and not just inhibiting but

prohibiting many desirable and increasingly essential face-to-face social relationships and human experiences.

The scientific and military principles which say "isolate and examine, divide and conquer, manifest and permeate all our social techniques including those that build our physical environment. And these abstracted concepts of order are more often than not at odds with the more important psychic order of man."

Izumi discussed the ways in which telecommunications can help build an urban environment which facilitates and enhances "essential human experiences". First they can "release us the ever-increasing time-binding routines of our daily lives... banking, making appointments and reservations, staple shopping...that interrupt and disrupt more creative activities in which we are and want to be engaged."

Izumi looked forward to the day when our moods and needs dictate the time to "tune in" to information or entertainment resources which "reinforce the face-to-face dialogue. This is particularly important in the learning situation, though what life experience is not? I must emphasize, that this resource is not to be substituted for the face-to-face dialogue as the industry tends to suggest. It is to enhance that essential human experience by extending, expanding and focussing our perception."

"As we free ourselves from the binding parameters of time and space through the appropriate use of this technology," Izumi concluded, we will be justified in "replacing the commercial and related facilities in the core cities with a more important setting that reflects the necessary shift from our preoccupation with the means of life to the meaning of life."

The How and the Why

The same concern was felt by the Minister of Communications, the Honourable Eric Kierans, when he opened the Seminar. "The concept of a Wired City", he said, "arouses two general and fundamental questions. The first is "How", how can it be done, with what equipment, at what price, available over what time frames. The second question is "Why", and it is the only question that really matters. In part it is redundant: Many of the components of a Wired City are already upon us and the task is that of drawing them together into an integrated whole and of making the new range of services more widely available. And so in a sense the "why" question becomes a "how" question also, but of a different order -- how can we shape this awesome technology to our social needs and objectives instead of allowing it to determine our objectives for us, and how can we make sure that we really are increasing the sum total of human

communication instead of simply increasing the speed, volume and efficiency of mechanical information exchange?"

For three and a half days participants examined the "How" and the "Why" of the Wired City. The "How" proved the easier question, yet even there the experts were divided about whether the answer lay in a single, switched coaxial cable system, or a hhybrid system combining an improved telephone network and an improved, but non-switched cable system.

Among the crucial "Why" questions raised were: the social and psychological effects of the shift from personal communication to telecommunication; the effect on home life of electronic education and automated shopping; the impact of two-way, individualized communication on social and political processes; the matter of whether communications can or should replace transportation, to some degree; the possibilite of using communications to create new communities within cities, or to revive dying neighbourhoods.

These issues were raised during a series of panels and succeeding discussion periods on <u>Technology</u>; <u>The Urban Social Environnement</u>; <u>Urban Commerce</u>; <u>Urban Transportation</u>, and <u>The Urban Physical Environnement</u>². At the close of the Seminar, participants met in plenary session to hear the reports of the workshop groups and to try to agree on the steps which should be taken, by government, industry and universities.

Most participants felt that, before any pilot Wired City project was initiated, a series of preliminary studies were needed to identify both the principal opportunities and the potential disruptions telecommunications would be responsible for. Among the areas suggested for early and intensive study were communications - transportation, and two-way - one-way communications. On these matters, as on most others, panelists and participants came up with more questions than answers.

2   A list of panelists and terms of reference for the Seminar is
    contained in Appendix 'A'.

PANEL I

BUILDING THE WIRED CITY

The purpose of the first panel was to suggest "how" the "Wired City" might be built. But before discussion began, the chairman, Professor M. Krieger of the Electrical Engineering Department, University of Ottawa, warned that it is difficult -- and perhaps impossible -- to discuss how a system might be built unless one knows what purpose it is to serve. The papers presented by the four panelists showed that all had recognized this problem.

Dr. John de Mercado, of the Department of Communications, proposed a definition of the wired city that many speakers were to adopt during the Seminar: "It is customary to think of a future city with a total communication system as a "Wired City". Where total is used to imply that the number of services that the system could provide is limited only by the imagination and pocketbook of the subscriber." But while de Mercado thought such a system might be possible within 10 to 15 years, he said that, individually, neither the telephone nor CATV has the capacity for "total communications."

"The telephone system, although highly developed and employing sophisticated and complex swithching techniques, suffers from the limitation that it utilizes pairs of copper wires as its local distribution facilities ("loops") ... only suitable for handling signals of the telephone or low speed data type."

Existing CATV systems employ coaxial cable which "can potentially provide more than 300 times the space (spectrum) of a copper pair. However, most existing CATV systems are usually laid out in grid fashion, and are specialized to the one-way distribution of broadcast type signals; therefore, these systems cannot be readily adapted to provide other telecommunication services requiring two-way transmission and switching (for example, telephony, computer aided instruction, etc.)".

Dr. de Mercado said it is possible, "at least conceptually", to significantly increase the telephone system's capacity by replacing its copper pairs with coaxial cable, thereby forming a switched coaxial cable system. "The British Post Office is convinced that this is a viable concept", and have an experimental system operating in their laboratories at Wembley. It is seen as the forerunner of multi-service coaxial cable systems to be installed throughout Britain during the next 20 years. However, the Dutch Post Office have come to the

conclusion that it is impossible to intergrate their television and have abondoned the idea.

"A switched coaxial cable system would have the same philosophy of operation as the existing telephone system," and it could accommodate such services as:

1) Advertising
2) Alarm (burglar, power failure, fire, etc.)
3) Banking
4) Facsimile
5) Emergency Communication
6) Communication between Subscribers and Computers
7) Meter reading (utilities)
8) Distribution of Radio Programmes
9) Shopping from the home
10) TV (origination and distribution)
11) TV (stored movies, available on demand)
12) Educational Television
13) Telephone
14) Computer Aided Instruction
15) Picturephone
16) Voting

"To determine the demand for, and use of multi-service intra-city cable communication systems," a pilot project should be built, within five or six years. "From a purely technological point of view, there are no insurmountable limitations to the degree of sophistication of the experimental system. The real problem is the high cost, which tends to increase exponentially as a function of the number of services". And in reply to a later question, Dr. de Mercado estimated the cost of a fully wired Canada at $70 billion.

Alex Curran of Northern Electric Company Laboratories accepted the feasibility and desirability of building a pilot "Wired City". His paper considered the technological development necessary for a system providing telephony, broadcasting capacity, two-way point-to-point video communications (videophone), information retrieval and data services. The system he proposed was a hybrid of paired-wire technology and coaxial cables.

In the Canadian telephone system today, the average loop length is about 2-1/2 miles. The material only cost of this loop facility is just over $100 and the inplace cost is not more than $150. Apparently then, the telephone modulation equipment for the wired city subscriber should cost no more than $150 and should preferably be closer to $100."

However, "the most inexpensive subscriber channel available today uses analogue frequency division techniques. The cost is about $450 per channel. Time division (digital) terminals today would cost more than $1,000 per channel, primarily because no significant effort has been made to apply them to the subscriber service.

"To make it attractive to incorporate the telephone network into the wired city communications system, it is highly desirable to offer a four-wire network, digital if possible. The cost of this new facility, however, must not exceed the cost of today's network for the service is satisfactory to the great majority of subscribers." Therefore, additional costs would have to be borne by the new services which an improved telephone system could offer.

"In creating the wired city we must also ensure that the telecommunications network will satisfy the user's needs for privacy." Considerable ingenuity will be required to design a subscriber's terminal which is sufficiently "tamper-proof" that the privacy of information is essentially equivalent to that of today's telephone network.

Similarly service availability has not been a serious problem in existing telecommunications networks, and widespread service disruption has been very rare. But "in a wired city service, disruptions will be much more critical." A fault on the distribution cable will interrupt all telecommunications services to a group of perhaps 150 subscribers who will not even be able to report the service failure.

"Obviously equipment must be designed to monitor the performance of the disbribution network to give warning of actual or imminent failure, and to localize accurately the position of the fault".

Claude Frémont, Deputy Director of the Department of Physics at Laval University and head of the University's Audio-Visual Centre, believed that the wired city is imminent, and "we need to start planning it now."

In particular, planning is essential in the field of electronic education: "A two-way communications system equipped with several channels would not only permit an individual school to choose appropriate courses for its pupils but it would also allow students to receive supplementary explanations from human, or even from electronic 'tutors'". At the University of Illinois, for example, the Plato System has put students and computers in an essentially tutorial relationship.[3]

3   D.L. Bitzer, B.L. Hicks, E.R. Lyman. "The Plato System: Current Research and Developments. IEEE transactions on Human Factors in Electronics, Vol. HFE-8 No. 2, June 1967, pp 66-74.

Professor Frémont suggested that the educational network will eventually be linked to industry, to the benefit of both management and workers. "The university-industry relationship will become more and more important in response to the needs of updating information and retraining".

"Tele-teaching" by computers may make it unnecessary for students to be on campus for the first two years of their degree courses, with the possible exception of laboratory of seminar sessions. In the later years however, where there is more specialization and classes are smaller, it would probably be more economical to bring students to classes.

Improved communications could benefit other fields. In medicine, there is the possibility of remote diagnosis over telecommunications lines and computer-assisted diagnosis. Better communications facilities could also make contact easier between academics from different disciplines and different campuses, and help bridge the gaps created by ever-increasing specialization.

As for some of the technical considerations of the wired city, Professor Frémont suggested that, whatever the system used, "in the first stages of development most of the information will probably flow one way from the centre to the users and only one voice channel will be needed for the return link. But in the second generation of terminals visual information will no doubt move in both directions." The system could be suppelmented by a second cable of smaller capacity which would be switched and two-way in the same way as the telephone system is today, and able to carry audio as well as visual material.

Frémont's notion of a hybrid system was shared by other speakers at the Seminar. But as Israel Swytzer of MacLean-Hunter Cablevision Ltd. suggested, competition between corporate entities with vested interests in different systems might be a greater obstacle to building the wired city than the difficulties outlined by the technologists.

W.G. Pither of the Welsh CATV Group in Vancouver, said that "if CATV was left alone it would continue to provide a basic entertainment service with some embellishments and technical refinements in the future." But this comfortable world could not last long, even though "many people within the industry want it to do just that." Already CATV is changing "from a passive receiver to a hybrid service." The CRTC's licensing regulations

are forcing CATV operators into programming and technological advances will transform their services into a multi-faceted industry.

As de Mercado had done, Pither pointed out the limitations of the existing CATV and telephone systems. He went on to suggest a judicious allocation of services to each of them - presumably by some independent authority - over the next 15 years. If such a division could be agreed upon, he foresaw an era of "peaceful coexistence" between CATV and the telephone companies.

To the CATV broadband cable he assigned such services as television and radio, shopping from the home, traffic and crime surveillance. To the switched telephone system he offered the telephone service, including picturephones, meter reading, burglar and fire alarms, plus banking and voting from the home. Services which both systems could provide - like facsimile transmission - he said should be offered by both on a competitive basis.

Within the next five years, Pither suggested, like de Mercado that a pilot project could be tried in a new community. Cost studies of a prototype system had been done by others, and it appeared that costs would be about three times those of the two separate systems. But the cost per user is "probably not a factor when weighed against the technological and sociological results... Much valuable information and experience would be gained. Not the least important would be the sociological effects of what amounts to a technological invasion of the individual's privacy." The number of homes connected to the pilot system need not be more than 1,000 and could be as few as 100.

In the first phase, a CATV system would be built, using "buried plant, two-way amplifiers, extended bandwidth devices." A variety of one-way services, not requiring swithching, would be offered. Subscribers would be connected by cable to a central office where, eventually, switching equipment would be housed.

The second phase would bring two-way services which do not require switching, and the third phase "the more difficult provision of two-way subscriber-to-subscriber switched services."

Because of past differences between cable television and telephone companies, it seems that the federal government would have to sponsor this project." Otherwise, "it is doubtful whether we will see either industry develop a switched coaxial cable system, or if they did, put it into use in Canada during the next 15 years."

Canada is currently in the vanguard of coaxial cable development.
"Let us not lose our leadership by complacency, lack of capital,
foolish jealousies, stifling regulations, and overcalculation.

- - -

The discussion period which followed turned almost
immediately to questions of policy. J. Alphonse Ouimet, Chairman
of the Board of Directors of Telesat Canada Corporation, said
Canada cannot afford a multitude of cable installations, and in
fact needed a unified system. At the same time, steps would have
to be taken to ensure that ownership of cable hardware would not
mean monopoly control over programming or usage. Would it not be
better, asked Ouimet, if CATV companies were owners of a hardware
system which others used to distribute programs and various
services?

PANEL II

A City is for People

If the technologists and policymakers of
telecommunications faced the question of "How" on the first
panel, on the second the social scientists grappled with the
issue of "Why?" The tone was much less optimistic. Indeed, one
panelist titled his paper "Beware! Wired City Ahead". A sort of
Luddite angst hovered over part of the discussion - an image of
total communications as totally inhuman.

Dr. David S. Abbey, of the Ontario Institute for Studies
in Education , whose paper carried the pessimistic title quoted
above, set the mood for the discussion:

"I am excited by the possibilitées of designing an urban
environment which provides the potential for interaction through
a distance; but I am fearful that more telecommunications gear
may lead to more action at a distance. I am excited by the
possibilitées of extending (or creating) educational environments
beyond the traditional physical structures of schools: but I
shudder to think of the exponential rise in costs as each new
service is added. The possibility of taking the town Council
meeting into the living room foy amall group discussions is
encouraging: but the inability of very mary groups to react in
real-time and simultaneously discourages me. I want adults to be
able to enjoy leisure as a productive (or escapist) commodity:
yet I see the effects of large ingestions of TV pap on all
sides."

Abbey described four possible facets of life in the
Wired City:

(1) "A wired city which had no direct feeds from or to
other parts of the province, or one in which line charges to
these were excessive but which had easy communication within
itself could foster a real sense of "We" as opposed to "Them."
The community would turn in upon itself.

(2) "A similar "logic" can be followed to create a
neighborhood. If local shopping, banking, discussion groups,
educational facilities CAI), library research and access,
production of drama, sports coverage, etc., are fed around on a
small grid with one or two foci (head ends) and only a few lines
to go out to the city centre then a real sense of the
neighborhood might be fostered.

(3) "Conversely, a sense of nationalism rather than
provincialism might be fostered by providing for various

communities at a distance to pick up or feed into some long haul transmission facilities. What CBC Radio and Television do for their portions of the spectrum might also be attempted for some of the services noted in (2) above.

(4) "The wired city can strangle us all, too... If the wired city becomes more of a reality and we add all the peripheral equipment now possible, we had better do something about teaching John Q. Public how to use it. How many non-college types know what a "See Also" card is? How are they going to interrogate a system?

"I'm afriad the answer is that many people will back off from the potential of the wired city, and will retreat into the safety of the personal world that they can smell and feel and see. Thay may not pay the mill rate; they may refuse to subscribe if services are offered to them; they may even buy in initially and them become disillutioned. If we design our cities on the assuption that wiring will bring about community and productivity then we better work hard at helping people to understand how to plug in."

Dr. Daniel Cappon, Professor of Environmental Studies at York University, said the crux of the matter was "both the basic conflict   and   the   intimate   relationship   between   mass telecommunication and mass transportation, public and private."

"If   the   world   increases its already intolerable overcrowding and pollutions, and if we can't do any better than using motors like cars and ultrasonic jumbo jets, and if the city continues to spread and sprawl then we shall prefer mass telecommunication and staying at home (even while working). This will mean escalated alienation, dropping out, opting out, indifference in the street, family break-up, interpersonal neurosis, socio-political fragmentation from regionalism to the block, the apartment, the house; the gamut of city malaise. Ultimately, in the circuit of "wired cities", there'll be no massive need for schools, places for assembly for education, no need for offices (e.g. filing cabinets) no need for the actual market place (it will be contained in the network) no need for parliament. And no need for extensions of our legs - transportation.

"If, on the other hand the Earth, the ccuntryside, the city became once more a pleasant place to live in, to visit, to circulate in, the need for mass telecommunication would be reduced; people and the family of man might become re-united."

Gail Stewart, an Ottawa economist, was more optimistic than the previous speakers.

"It is currently fashionable to fret a bit about the social implications of the wired city, as though there were some real danger that we might be worse off with two-way communications capability than we have been with predominantly one-way channels. The wired city will not solve all social problems and admittedly may even create a few of its own. To focus upon minimizing these, however, rather than upon developing to the full potential net benefits of the new technology, is to invite a mediocre response to a magnificent opportunity."

Clear policy and sound planning could create a system where social objectives, rather than technical and commercial requirements, were dominant.

"Let me say right away that I am not making a simple argument for public ownership -- I am making an argument for a planned mix of various methods of social control over the communications industry in pursuit of certain defined objectives. Social control policies in my definition include competition policies, various kinds of regulation, and certain forms of government encouragement or discouragement of private industry."

"The environment in which we live is increasingly the product of human decisions and under human control. Forethought and care in its development are increasingly necessary letting events take their course increasingly risky. In more and more fields we shall have to proceed by defining our social objectives -- by specifying the kinds of environment we want -- and then moving to achieve it."

Mrs. Stewart defined six social goals for wired city planners:

1. "The needs of the ordinary private citizen would have first priority in building the wired city, and it would be responsive to his needs in a continuing way.

2. "The wired city would have two-way communications capabilities, with an electronic retrieval capacity which would reduce the potential market for devices which attach to television sets but rely upon physical pick-up and return of videotapes for home viewing." Incidentally, the system would contribute to "the erosion of broadcasting and of advertising. Both become second-best forms of communication in a two-way environment, and it seems likely that both can dwindle to a vestige of their importance today without great social loss."

3. "Among the organizations collecting and distributing information to the public there would be at least one which did not have a vested commercial interest in the use made of that

information, so that public access to factual and unbiased information would be protected.

4. Control of communications facilities and of information stored and carried by them would be in separate hands.

5. Government officials responsible for social control of the communications industry would not also be responsible for promoting the health of the industry.

6. The wired city should also:

- Show special concern for the problems of low-income families in acquiring and disseminating information;

- have a clearly bicultural or multi-cultural character;

- "provide special opportunities for those who operate it to acquire knowledge, develop skills and use their initiative for its imporvement."

A major obstacle in the way of achieving these goals was the division of constitutional responsibilitées which "does not reflect any reasonable classification of the needs of the individual citizen, the general public, of industry in the communications field." The citizen has no protection "unless there is either perfect coordination between governments or, failing that, one government, the Federal Government in this case, undertakes to think and plan for the whole body politic." But the Federal Government is not responsible for all the communications policies affecting the public.

In the circumstances, it is important to have strong and effective agencies "which do have sufficiently broad terms of reference to represent the public adequately in the formulation of public policy. The government policy mix must embrace the support and encouragement of such organizations."

"It would appear that competition has an important role to play in the communications field. Revision and up-dating of the Combines Investigation Act should have high priority." Special encouragement may have to be given to "particular activities which are highly productive for Canadian society as a whole, but because of the peculiar characteristics of information as a commodity, cannot attract adequate private investment." In such cases, government support should be considered.

"I have argued for encouraging greater public awareness of and involvement in the policy-making process which will lead

to the wired city. As the Telecommission draws to a close and the process of policy formulation proceeds, I hope that special steps will be taken to inform and involve the public.

"In particular, I think that the early and deliberate creation of a non-profit community information clearinghouse and network would be desirable... it seems to me to be the core system of the wired city. It might indeed form the basis for a wired city pilot project involving government, industry, university and public participation."

In the following discussion period, Prof. Thomas McPhail, a sociologist from Loyola College, expressed disappointment at the "wholesale buck-passing" by his colleagues who did not believe in the merits of a two-way communications system.

Both Dr. Abbey and Dr. Cappon responded that not enough long range research existed on which conclusions about the environmental impact of communications could be based. Dr. Cappon believed there should be much more social research conducted, and added that there might even be some economic justification since software was becoming an increasingly important element in the cost of new information systems.

PANEL III

Commerce in a Wired City

The wired city may be coming, but how soon and in what form depends largely on cost -- and on what the customer is prepared to pay.

M.F. Anderson, General-Manager of Simpson-Sears Ltd., began by warning his audience: "Consumers have a most disconcerting habit of confounding the most elegant technology by acting like people." He recalled the uproar some years ago when the telephone companies abolished exchange names and introduced the seven-numeral telephone number. Hopefully "the next generation of consumers will be more rational in their assessments of the need for those technological changes which disturb the familiar."

In the wired city, "the data set in the home will be a more powerful instrument for transacting business than it is today," Anderson predicted. It will have a convenient automatic transmitter "to expedite the handling of fixed data pertaining to both the household and the supplier." It would be similar to the present card dialer, although much cheaper. For routine merchandise purchases, the kind where 'shopping' is neither easy nor fun, I would expect an extension of the present catalogue selling techniques, using this data set." It will be relatively simple for the householder to connect with the store and transmit a charge account number, or bank account number, his address code and his telephone number. Then he would key the quantities and catalogue numbers of the articles desired.

When shopping for items bought repetitively, like groceries, the householder might well retain a file of plastic 'cards' capable of activating the transmitter. A catalogue and the keys would be used for other purchases. "The householder will have accessible cards to call the doctor (presumably for advice and instructions -- not for a visit), the police, the fire department and so forth."

Anderson questioned whether cable systems could be economically converted to two-way communications and said: "It would seem more probable that cable channels will be used to supplement catalogues and cards files. For example: daily specials from the food distributors might be shown and described in a certain time slot each day.

The data set could also give the householder access to data banks - perhaps for consumer information. "It has been predicted that public libraries will extend their function by refining and organizing data instead of merely storing documents

for others to search... Use of the data terminal to reach such a public data bank would be relatively straight-forward, and key information would be sent back by audio response.

"Private data banks could be accessed in the same way, and banking and other account information could be made available, although provision would have to be made to secure private information from electronic prying."

Are these domestic communications systems gimmicks or truly useful developments? "It is my position that the inherent conveniences and economics are very useful indeed."

"The policies of all levels of government should be those that will hasten such inevitable developments -- not retard them."

telephone system a common cable system and they
Michael Hind-Smith, Vice-President of Media and Broadcasting, Foster Advertising Ltd., cast himself in the role of defender of the private enterprise ethic, and provoked considerable controversy.

Advertising, Hind-Smith declared, would find its outlets in the wired city just as it had in the print and electronic media of the past. But communications systems which allowed much greater freedom of choice for most households could have an important impact on the way entrepreneurs allocated funds for advertising.

Present television advertising is geared to mass audiences, and is so expensive that it is beyond the reach of many businessmen who, in any case, are aiming at a socially or georgaphicallly restricted audience. Cable systems in many Canadian cities could be used to reach restricted groups of consumers if the CRTC would permit local advertising on CATV systems.

A fragmentation of advertising would, he predicted, lead to a fragmentation of programming and a decline in the importance of the mass media. "While there will still be conventional broadcast stations, their programs and national advertising will be distributed by, but in direct competition with, cable casters and local advertising."

At least two other-contradictory-developments are possible:

(a) "Major retailers with comprehensive services such as Department Stores may ultimately find it economical to rent whole channels or major portions of cable channels tied in with return computer impulses for shopping at home.

(b) Specialized programs like professional sports, which the national advertiser has hitherto supported, may become so expensive that they are inefficient as advertising vehicles. "The opportunity for the cable operator (nationally networked by this time) is the re-introduction of pay-television, a premium service for which the consumer will pay directly rather than indirectly as part of the cast of advertised goods."

Robert A. McDougall, Vice-President of the Bank of Montreal, began by declaring he suspected that the Seminar's real purpose was to marshall support for a wired city pilot project. Such a project was "premature and probably irrelevant". What was needed was "the establishment of a methodology" which can help us find meaningful answers to relevant problems.

A study "identifying the probable environmental situation and problems in 1985 should be undertaken without delay, "by people drawn mainly from commerce and industry. "This is not to say that university representatives, including social scientists, should not belong to such a project team, or that government people should be excluded, but it is essential that the 1985 picture be drawn up by those who are intimately aware of the environment and the realities of practical situations, and not just (with apologies) by those who merely wish the world were a more ideal place."

The second step would be a study of the probable over-all technological position in 1985, covering many areas besides communications.

The next move would be "to explore the possibility of using the anticipated 1985 technologies to solve the potential 1985 problems." Communications would undoubtedly show up as a major element, but not necessarily as the whole story.

Step four would be a programme -- involving industry and commerce, government, and the universities -- to ensure that the appropriate moves are made between now and 1985, and that the objectives are achievable by that date.

Unless senior people from commerce and industry are deeply involved, "it is most unlikely that step four would be accepted or that it would function as a practical reality. Dictatorial control cannot be exercised by government agencies, any more that it can be done within large industries."

On a more specific note, McDougall described the integrated computer and telecommunications system being installed in his own company.

"Plans at the Bank of Montreal call for the largest terminal-orientated banking system in the world, and, according to the Chairman of our Bank, represent the most revolutionary development in the history of Canadian banking. All of our 100 branches will be equipped with terminals -- one terminal for every two tellers, and at least one administrative terminal in each branch."

The terminals will be linked directly to a central computer complex, where all transactions from every branch will be processed. It will maintain all records, including customer accounts, for the entire Bank. Management information will be handled on the central facility, and it will be assessed by the administrative terminals. Virtually all the existing manual bookkeeping and routine chores will be eliminated.

"Obviously, the transfer of funds will be vastly improved if retail establishments employ our terminals on their premises." Instead of having a credit card or being billed directly by the retailer, the customer could arrange for a transfer of money from his account to cover the amount of the purchase. "It is entirely possible that touchtone telephones or similar devices will enable our customers to tie directly into our system," but the need has not yet been firmly established.

The discussion that followed showed the conflict between the "laissez-faire" attitude and the "dirigiste" approach favored by the social scientists of the previous panel. When Dr. Cappon declared morality dictated that the effects of a new system be known before it was introduced -- implying that policy-makers and their advisors should decide what was good for the people -- he drew this reply from Professor Donald Armstrong of McGill: "I distrust the command society because I don't think anybody is that wise". Yet some action has to be taken on society's behalf. When Professor Izumi said that as long ago as 1957 predictions were made about the dangers of a widespread use of drugs, McDougall's reaction was that the public should have been acquainted with the problem, by those who knew about it.

And finally, Toronto Lawyer Gerry Grafstein pointed out that someone had to pass judgement on technological systems, since some were obviously more beneficial that others, for society.

PANEL IV

Communications and Transportation

Communications systems can improve the efficiency of existing transportation systems, as computer-controlled traffic flows have shown. Communications can also substitute for transportation - for a business deal concluded over the telephone removes the need for either party to actually meet the other. In fact the relationship between the two activities is so close that they are, ultimately, different aspects of the same process: transportation means the movement of goods, or people, from one place to another; communication means the movement of information, between places or people.

Two speakers, both urbanists, Professor A.J. Dakin of the University of Toronto and Professor Iskandar Gabbour of the University of Montreal, considered the potential use of communications as a substitute for transportation. Two other panelists, R.M. Knox of the TRW Systems Group and Lee S. Sims of the Federal Ministry of Transport, dealt with ways in which urban transportation systems could be improved by telecommunications.

Both Dakin and Gabbour questioned the notion that telecommunications could be regarded as a simple substitute for transportation.

Professor Dakin said that while we do indeed substitute information movement for bodily movement, it is not on any simple basis. "The technical equipment making possible substitution allows new things to be done that were not possible before. The telephone begins by substituting for the letter or the errand boy. It goes on to become a medium for selling things and a means for machine to talk to machine, and automatic passing and storing of information that did not previously exist."

"Many substitutions are substitutions of substitutions...The telegraph does the job faster than the letter. Then the telephone substitutes for the telegraph. The typewriter substitutes for the clerk with a scratchy pen. The dictaphone plus typewriter substitutes for the shorthand typist."

And substitutes increase transactions: "they have an innate capacity of their own...and must be expected to generate their own potentials." A new mode of communications may not merely substitute for a slower mode, but may also allow new activities which require transportation.

Professor Gabbour reminded the Seminar that the history of cities shows that improved communications have not often been coverted into "reduction in the duration of movements".

"Generally", said Gabbour, "only about 50 per cent of these gains result in time-saving. The remainder is translated into a residential dispersal which increases the average duration of movements over what they would have been if the original configuration had been maintained."

Even if one accepts some substitution of communications for transportation, changes are taking place in the configuration of cities that will result in increased demand for transportation. Cities, he noted, began as concentrations of population which allowed a more efficient transfer of goods and information. With improved transportation, cities have tended to disperse into suburbs and exurbs, where modern communications have made it possible for people to maintain contact with those at the centre. So in the final analysis, the relationship between communications and transportation is complementary.

Professor Dakin amplified this theme: "The wired city is not the city of substituted physical movement. and informational availability. It is the city of expanded transactions over an exploded region in which the tempo of life is increased and human consciousness is made more vivid."

First, the 'city' will give way to the greater urban region, at a greater rate than is already happening. This expansion will be accompanied by a rising demand for telecommunications facilities in non-urban areas, and also by improved transportation, for "when the urban dweller becomes exurbanite," he demands more goods and services. And as the 'region' becomes more urban, telecommunications improve once again, and in their turn attract more traffic. Therefore, said Dakin, "physical communications and telecommunications mutually stimulate each other's growth . This is a characteristic of the so-called post industrial society."

The extent of the region could be enormously increased, Dakin said, by"

1) Expanding the areas and times of low telephone rates.
2) Using the view phone, even if only at specialized telecommunications centres.
3) Establishing centres equipped with facilities for data processing and transmssion, conference link-ups, secretarial service, etc.
4) Linking the domestic telephone to specialized equipment owned by the subscriber. "The recently developed possibility of plugging in a computer manual to a callbox phone is perhaps the beginning of some expansion in this field."

Although the growth of telecommunications may initially increase the density of central urban areas, "the predominant tendency is toward a very low density development over the region as a whole." People like to escape from the city and its routines. "If large numbers of individuals have these feelings strongly and if they can afford to leave the city they may so force the pace of the use of 'substitute' telecommunications that a whole new culture may emerge."

For his part, Professor Gabbour observed that:

a)   the ever-growing use of communications affects the process of planning transportation and land use; thus a systems analysis covering both areas becomes increasingly necessary;

b)   the role of the city core will be to offer specialized services in a concentration of business buildings, art galleries and other centres of activity involving a high degree of public participation; "the city core supported by a significant number of identifiable and properly inter-related sub-centres will constitute a powerful network of exchanges and communications."

Using communications to improve the efficiency of transportation systems was the concern of Robert M. Knox of TRW Systems:

"It seems quite obvious that the way to achieve good traffic control is to let the computer collect the data; let the computer analyze the data; and finally, let the computer change the signals. Traffic engineers around the world are trying to do just that." Several North American cities have been using computers to control the traffic flow, among them Toronto, New York City, San Jose, and Wichita Falls. Toronto was one of the first cities to install an extensive computerized traffic control system, and its initial test project started 11 years ago.

"The last link in the communications system, and perhaps the most important from a system performance/cost point of view, is the Data Controller and Computer/Communications Interface Unit. This device, coupled to a communications-oriented third generation computer, enables the efficient transfer of large blocks of data to the computer core memory. This data transfer takes place with minimal supervision...The interface unit can process data received over a large number of communication channels. It can accommodate the largest system expansion, even for a city such as New York or a widespread area such as Los Angeles County."

With this kind of communications capability the city traffic engineer "can economically incorporate variable message signs into his control system. Route guidance for the motorist moves one step closer to reality. Vehicle locator systems can be incorporated for use by police and fire departments, or it is possible to lease such a service to taxi-cab companies or local concerns using extensive fleets of delivery trucks. And all this can lead us closer to the dawning of the automated highway, the motorist's age of Aquarius."

Lee Sims of the Ministry of Transport described the accelerating use of communications to increase the efficiency of transportation systems:

"Pioneered on Expo '67's Expo Express, automatic train operation is being installed on newer systems such as London's Victoria Line and San Francisco's BART System. The trains are driven at the proper speed from one station to the next, the train is stopped at the proper place on the platform, and the doors are opened and closed, all by the means of an automatic central control. Switches are set, destination signs on the platform are changed, and schedule adherence is enforced, all automatically."

The Westinghouse Skybus, a new urban rapid transit system whose prototype is operating in Pittsburgh, will also be automatic.

Extending these systems to surface transportation is difficult because buses and trolley coaches operate in a much less controlled environment. Nonetheless, London Transport is experimenting with a system of automatic bus identification. After a bus is "recognized" by an optical scanner, the bus number, route, time and so forth are communicated to a control centre where this information is displayed and remedial action can be taken if large deviations from the schedule are detected.

The Chicago Transit Authority is testing a more sophisticated bus surveillance system that uses radio communications. "A central computer interrogates each bus several times a minute. Equipment on board the bus automatically responds and gives the bus number, its route, its direction and the time it passed the last radio "signpost" by the side of the road. Since the computer knows the time the bus should pass each signpost, it can automatically calculate and display information about the bus' schedule adherence. The system also includes a voice channel and an alarm system. With all this data before him, the controller can monitor the operations, and at the first sign of trouble, using his radio control he can take the appropriate action."

The automobile has cut into public transportation to such an extent that it now accounts for only about about 15 per cent to 20 per cent of all urban trips, and the proportion is decreasing. "The resulting increase in pollution and congestion is obvious to all. Cars have encouraged a dispersed urban settlement pattern so that for the only, the young, the poor, and others without access to a car, it is becoming more difficult to get around." Drastic improvements in public transport are necessary.

One of the more promising innovations is the telebus, which instead of following fixed routes on fixed schedules, is dynamically controlled by a central computer according to demand. "A subscriber might telephone the computer's number; the computer would automatically look up the address, compute a new optimum route for all vehicles under its control, and send a vehicle within minutes to the subscriber's home."

Other urban transportation possibilities include those where vehicles carrying either a single passenger or a small number of people "move along electronic guideways non-stop from origin station to destination station. On some of these systems the vehicles may leave the guideway and be operated manually on ordinary roads while on others the system and the vehicles are restricted to the guideways. In some cases it is thought that private vehicles may use the guideways but in all the proposed systems vehicles are available for hire." Prototypes of several systems have been built and the guideway concepts shown to be mechanically sound and efficient.

"While the control system for such a network must be extremely complex, comparisons with the size of the telephone network at any large city and with the sophistication of transportation planning models and signal light control systems make the concept seem much more feasible."

PANEL V

The Form of the City

        Perhaps the commonest, and least founded, concern about
the wired city is that it would add to the tangle of wires above
urban streets.   Of major significance however, is the impact of
total communications upon the physical structure and form of
cities.

        Professor Patrick Horsbrugh of Notre Dame University
reminded his audience that telecommunication requires large,
visible and often ugly equipment. He proposed that "the
statutory definition of telecommunication systems should be
enlarged to recognize also those visible structures upon which
any communication system depends, and which, by reason of their
design, their numbers or their position relative to other
features of the city, justify identification."

        In view of the rising public impatience with aesthetic
pollution, Horsbrugh said "if this prognosis of emotional
impatience with communications impedimenta (from wirescape
entanglements to billboard clutter) is accurate, then the
minister's legal advisors might see the advantage in expanding
the present Telecommission Studies into a nationwide Consensus on
the social values of positive aesthetic qualities to be backed by
legal testings upon the ethics of imposing upon an unwilling
individual the sight and reminder of something against which he
has no defence, and cannot avoid."

        The   United   Nations,   he reminded the group, was
organizing the world's first conference on 'The Problems of the
Human Environment' in 1972. In the meantime, the Telecommission
could establish Canadian leadership in what he termed "the realm
of environic awareness."

        Professor Alex L. Murray, of the Department of
Environmental Studies, York University, agreed with Professor
Dakin that communications and transportation are really
complementary, and therefore he was "somewhat sceptical about the
dramatic impact telecommunications will have on the form of our
cities."

        In particular, he questioned the view that
telecommunications would reduce the need for high density living,
by making it unnecessary for people to live close to stores,
theatres, churches, friends and relatives. According to Murray,
"the real determinants of urban form are the basic services of
water, sewage, roads and mass transit.   Only as these are
expanded by being plugged into existing systems can new

residential locations become available. The lower the density, the higher the cost of the servicing.

"If some inexpensive re-cycling device can be invented, perhaps out of space technology" low-density living would be more possible. Yet even that possibility is limited by the need for access to jobs, and "few people like to commute regularly more than 30-45 minutes. I don't see telecommunications changing that for very many people." Only if almost all employment activities could be handled by computer terminal, videophone, etc. would freedom to work at home become operational.

The physical form of schools and universities could be altered by the wiring of cities, and, like the new TV university in Bavaria, they might almost cease to be institutions with campuses, classrooms and large centralized libraries. But their course offerings will be limited, compared to what a large university can now offer. Even with 25 channels available on co-axial cable not many programmes can be broadcast at any one time. Home use of VTR and EVR could, of course, increase the range of possible courses. "But all this is very costly, more costly than using live professors."

The past 30 years have seen the movement of manufacturing plants into the suburbs and the exurbs, largely because of improved road transport and the increased use of aircraft for shipping. Telecommunications had little to do with it. But cable systems linked with computerized data banks make it possible to separate production plants from company headquaters, which can remain in the more prestigious central area. This trend is likely to increase.

Remote shopping via touch-tone telephone might soon be widely used for routine purchases, but "specialized shopping would probably become more significant." As Murray observed, "shopping is very much a recreational and social activity."

It was Murray's conclusion that "Canadian urban regions in 1990-2000 will not look much different from what they do today. They will just be bigger."

The final speaker, Professor M. Barcelo of the University of Montreal, suggested that telecommunications might very well make things worse for a whole class of urban dwellers: Those who live in what he called the "grey zones" at the city core.

These zones are residential parts of the city, built before the advent of the automobile, and now its chief victims. Telecommunications, Barcelo contended, could still further increase the gap between the "grey zones" and the suburbs which were created by the automobile.

In those central city areas, "the installation of the ordinary telephone has created serious problems. Invented for private conversation, this apparatus is ill-adapted to a small overpopulated house where there is, in general, only a tiny common living room." Even television, which is a one-way form of communication suitable for collective viewing, creates "serious problems of channel conflicts between members of the family."

For remote communication to be successful, there must be a "conviction that the means used effectively brings the interlocutors closer." But Barcelo said he had seldom noticed this conviction among members of the urban poor. "For a certain group that I know well, the City Hall, and the authority it represents, seems much more remote physically to them than to me. And, on the other hand, it seems to them absolutely inaccessible through the ordinary telephone that you and I use constantly.

"While our conception of the city, at least my conception, has moved away considerably from the idea of a precise physical territory, theirs remains strong spatial and territorial, and the poorer they are the more limited it is. I know it is difficult to imagine that there are persons who live one mile from Place Ville-Marie and do not even know of its existence or where it is located, but our enquiries have revealed, more than once, facts as alarming as this one: the "town", the urban territory of several Montrealers, very often has a radius of not more than a quarter mile. Can we imagine that, through telecommunications, this radius could be extended to several tens or hundreds of miles without inventing some sort of participation which, for the time being, is totally unknown to us?

In the following discussion, Barcelo suggested that instead of studying the effect of communications on the urban housewife, funds should be available for research into the use of communication in the 'grey zones' of cities.

If "the ideal of a wired city is socially desirable...Are we ready to accept that a "socially" desirable objective for the Canadian society as a whole cannot really be desirable unless the economical and cultural minorities consider it as useful as the economical and cultural majorities? Are we ready to modify our national objectives so that Canadian society has a strict minimum of non-participants? Or else, are we so proud of our suburbs, our colour television, our direct distance dialing, that we should consider the third solitude as being the necessary price for these amenities?"

CONCLUSIONS

"The defining of objectives was agreed to be essential, and yet virtually impossible."

Workshop Report

Seminar participants found it difficult to visualize the technological shape of a wired city, and even harder to see it in its social and political context. The fact that they were asked to consider <u>what</u> <u>should</u> <u>be</u> rather than <u>what</u> <u>might</u> <u>be</u> did not make their task any easier.

The multidisciplinary workshops discussed at length the issues raised elsewhere during the course of the Seminar. The majority of workshop observations and recommendations are grouped under subject headings. But two workshops prepared a long list of proposals which were often complementary and are combined in summary form below.

The strategic placement of computer terminals concerned both groups, and they suggested putting them in booths, public buildings and banks in a community. Minimal charges should be made for home terminals, to encourage maximum access to information. And, on an experimental basis, terminals should be placed in some inner city homes to find out if they can help equalize opportunities.

Concern for low income people recurred in the recommendation that educational television programs, concerning job retraining for instance, should be prepared specifically for the inhabitants of big-city ghettos.

Several proposals by these two workshops concerned the telephone. They suggested free long distance calls and free information from the telephone system about such things as time, weather, theatre and scheduled services. It was also recommended that a rotating selection of decision-makers should be accessible by phone for one hour each day. A conference telephone system installed within a discrete housing project was another idea.

Television should be non-commercial, and at least one CATV channel should be devoted to Parliamentary proceedings. CATV systems should be compelled to open one or more channels to community organizations and two-way video production should be introduced between some schools and ethnic groups across Canada.

In the field of education, Computer-Assisted Learning devices should be installed in a representative sample of homes.

It was pointed out that "there is a danger of creating a hardware system we cannot afford." More effort, it was felt, should be put into producing better software for existing media. And a greater awareness of changes over time was needed, so that people may consider the future consequences of planning.

The Majority View

1.   The Wired City as a descriptive phrase was accepted by most groups as a convenient label for total communications systems within urban areas. One group felt the title misleading, and proposed instead the "planned city" or "electronic city". Another group stated: "The phrase 'wired city' should be re-worded to refer to the services provided by the telecommunications facilities."

2.   Switched coaxial cable systems are a technical possibility, but are by no means economically certain. One group said specifically: "Talk of replacing or supplementing the present telecommunications infra-structure with multi-service coaxial cable system is too speculative and utopian." The reason given was the high cost. One workshop believed that such a development was more likely to emerge from increasingly sophisticated CATV systems than from the telephone network. But most others wondered whether CATV systems could ever supply more than they do at present: one-way entertainment and information programs. Several workshops agreed on the need for research into possible advanced communications systems which could serve as building blocks for a wired city.

3.   Whatever its technological foundation, the Wired City will happen. This was not a unanimous, but a general view, and it was put into words by two workshops. One said: "there was a general consensus from the outset that the wired city in some form was coming, whether we planned for it or not"; and the other concluded that "it was taken for granted that such a system would ultimately exist, whether or not it happened later than the 15-year perspective laid down at the Seminar". Restraining factors on the progress of the Wired City were social ("will people really want to use all these new services?") and economic ("Concern was expressed over the tremendous investment that will be required.")

Assuming that it will happen, in part or in full, the Wired City will create probems as well as opportunities.

4.   Telecommunications may increase social alienation. One workshop asked: "Would social isolation and alienation result if people could obtain most services in the home? Shopping could be seen as a social experience. Would people lose their inquisitiveness and miss the surprises in life? Perhaps the

written culture is dying as the telephone becomes more important that the letter." Another workshop posed similar questions: "Will the reduced necessity to conduct business in a common office tend to diminish social gregariousness and harm the social psyche? What are mass telecommunications doing to the levels of social confrontation?" One group raised the possibility of a 'Luddite' reaction against too much technology. Another stated that "These systems must allow for the spontaneous exchange that occurs in face-to-face interaction..Children would have access to education material on demand and could therefore schedule their own activities. The human contact provided by the school, however, was seen as a continuing need."

5. More information may be too much information. Two groups raised the issue of information overload. "Concern was expressed over the pollution aspect of providing too many information services" one reported, while the other asked "Can there be too much communication in too quick a time?"

6. The Wired City could produce major changes in the political order. If information is power, then the more people who have access to it the more will political power be dispersed. One workshop felt that, through the wired city's capacity for two-way communication, "people might be encouraged to participate in decisions, and by participating, accept the outcome of decisions. Telecommunications should then be used to create a sense of community participation in, and responsibility for, decision-making." Another group said: "Greater exposure is needed for problems requiring corrective or regulatory legislation" and more comprehensive information is required by the public so that proposed policies can be assessed. "The telecommunications systems should be used to greater advantage by governments, interest groups, citizen and professional associations and acedemia in order to provide this 'political' service. Audio-visual linkages between an MP or MLA and the legislatures might increase the member's mobility and permit better allocation of his time."

7. Citizens will have to be taught to make the most effective use of Wired City systems, for political or other purposes. As one group put it: "A 'Yes-No' button in every home presupposes well-informed decision-makers. The humane use of technology therefor demands educational up-grading of people so that they won't simply push buttons but understand the implications of their actions."

8. No matter how sophisticated, communications systems are unlikely to substitute for transportation. All workshops which considered the question reached this conclusion. Cne said that "over the next 50 years the proliferation of telecommunications will not replace transportation, but instead, direct or face-to-

face communications will incite the population in general to travel more and thus multiply the opportunities for transportation." This same group added that "total communications will not substitute for personal, face-to-face communications, but on the contrary will add to the needs of the population for physical exchange among themselves."

9.   Control and regulation of the communications system is essential. One workshop report said: "We must look ahead and plan for the time when the cable industry will be a large public utility", and "it was felt that under those circumstances, the producation and distribution functions should be separate." Several groups agreed, and said that this division should apply to all communications facilities.

      "The creation of a single system of transmission for all the country," was one group's recommendation, but opinion was divided over who should own and operate an integrated communications system, and how it should be regulated. The conflict of ideas was reflected in one workshop report: "One faction felt that 'the government shouldn't be mucking around running these things'; another faction that they'd rather have the government run a utility than the cable companies." A similar division was expressed in another report: "Fear of all communicaton systems being contained in one large tube under the control of one authority was expressed. Public ownership of hardware was felt desirable, but there was concern over the software of the system and the necessary control of content." And one group concluded: "There was some scepticism as to the likelihood of government performing a good coordinating job in this field...There was a strong fear that the complexity of the technological and social issues involved in telecommunications militated against reasonable policy proposals by the Department of Communications and ultimately, effective legislative enactments by Parliament."

10.   Whatever its structure, the Wired City implies social and political change of a magnitude that requires study and planning. Proposals ranged all the way from a formal task force and a pilot project to a generalized recommendation for research into critical areas. Participants were warned about the high costs of a wired city, and another important cautionary note was sounded by the workshop which reported that: "The group was implored to be concerned with 'what is', rather than always seeking refuge in studying 'what should be'. Using existing and anticipated technology to answer present needs was seen as preferable to trying always to predict and answer future needs."

      "Discussion began with a recognition of the importance of looking ahead," was the report of one group and it reflected the genral feeling.

11.   The formation of some type of multidisciplinary task force was recommended by most workshops, to predict the social, cultural, political and economic effects of impending communications and computer technology. One specific suggestion was for: "A task force to design research proposals to explore the impact of electronic technology on society. This task force would be composed of about 10 experts from various disciplines, and including industry and other telecommunications users."

"The government could permit the development, under ordinary market pressures, of new telecommunications services in specific areas. With the aid of mathematical models it would be possible to simulate the appearance of new services in an area so as to be able to predict some of the environmental consequences and thus avoid the advent of phenomea such as those of water and air pollution." Any task force should make use of systems analysis and of "a market survey and cost analysis".

12.   No pilot project should be undertaken until its validity has been tested and proven by preliminary studies, it was generally agreed. In one workshop, some members voiced their suspicion "that the government had already decided to do a wired city pilot project, and wanted the participants to agree to the recommendation." Mention was made of the need to take advantage of advanced urban communications projects, actual or planned. Erin Mills, Ontario, was one example, and there were more in other countries. Several groups emphasized that any pilot project should draw upon the widest possible range of disciplines--urban planners, social workers, doctors and businessmen were specifically mentioned.

The most explicit recommendation for a pilot project came from one group which declared:

"A mandate for the definition of a pilot project should be given to a sufficiently broad and representative group consisting of government? industry? universities? and interest groups. The guidelines should be wider than considering the merely technical (engineering) side of the wired city. These should be wide enough to cover the social and economic considerations necessarily implied when talking in terms of a pilot project on the wired city."

Suggested sites for the project -- should it happen -- included St. Scholastique Airport and Kanata, Ontario.

13.   Any studies which may be undertaken should take account of the needs of all citizens, "and not just the kind of elite that would be able to afford all these new services." That was the feeling of several workshops. According to one group, "many

felt that new technology is benefitting only a small percentage of the population." And another asked: "If the urban areas are to be provided with city services, what will happen to the rural areas?" Specific concern was expressed for the needs of the young, poor and cultural minorities.

Studies involving the future run into difficulty because, as one workshop observed: "People can't predict what effects technology will have on them so they cannot specify what they want the systems to do...The social scientist cannot determine what is wanted, because people cannot see their needs. Nor can they understand the implications of the technology. Therefore cooperative effort between the technologist and the social scientist must occur so that collective objectives can be set, and systems designed to meet them."

A Final Note

After all the proposals for giving people access not only to information but to each other, there was a certain irony in one workshop's observation "privacy is now a luxury. It must be made a social value so that everyone can be alone if he so desires." Perhaps it will be necessary to create special environments, one group said, while another recommended that "public retreat centres be created for refuge from the compulsion of utterance and exchange."

Some people, it seemed, feared that the Wired City would be another Tower of Babel.

Seminar Objectives

The purpose of the seminar was, <u>in general</u>, to determine how advanced telecommunications technology can be used to meet the needs of cities and how such technology will shape the needs of cities and <u>in particular</u>, to consider the desirability, feasibility and possible scope of proposals for a wired city pilot project involving government, industry, and university participation.

Technology Panel

The objective of the panel was to explore and chart from the technical point of view the problems that might arise in implementation of future intra-city multiservice communication systems; and specifically to survey the technical and economic parameters of intra-city telecommunication systems that may be anticipated in the time frame of 1970-1985.

Urban Transportation Panel

The objective of this panel was to explore the impact of communications technology on urban transportation; facilitation and/or substitution.

a) What role can it play in developing better urban transportation systems? Computerized urban traffic control can expedite the movement of traffic on our congested existing road networks. Telecommunications devices are being introduced into conventional vehicles and transit systems; they represent essential parts of most new modes of urban transport. What are the costs and what are the benefits to users and to the community?

b) Is substitution probable, desirable and feasible from economic, cultural and physical standpoints? What are the implications to transportation planning and traffic engineering?

Urban Environment (Physical) Panel

The traditional concept of the urban area as a physical place is being challenged by one whose concerns are with flows of money, goods, services, information and human satisfaction. The potential of communication technology for extending social inter-action and for making information readily available can be expected to further stimulate new approaches to the city and to city planning, to influence the form of the city and the rigional pattern of urbanization, and to have effect on recreation and its physical aspect.

Urban Commerce Panel

The objective of this panel was to explore the impact of advanced communications systems upon urban commerce, with particular emphasis upon how such systems may affect the relationship between business firms and their clients.

Urban Environment (Social) Panel

The objective of this panel was to explore the impact of advanced communications systems upon social environment of the city, with particular reference to the impact upon personal, family and group identity and upon patterns of education and leisure.

APPENDIX "A"

Seminar Chairman: R. Gwyn, Department of Communications

Panelists:

1.   Inventing the Wired City

M. Krieger, Ottawa University (Chairman)
A. Curren, Northern Electric Ltd.*
John de Mercado, Department of Communications
Claude Frémont, Laval University*
W. G. Pither, The Welsh CATV Group*

2.   Urban Environment (Social)

Claude Asselin, City of Montreal (Chairman)
David Abbey, Ontario Institute for Studies
                In Education *
Daniel Cappon, York University *
Gail Stewart, Ottawa *

3.   Urban Commerce

D. E. Armstrong, McGill University (Chairman)
M. F. Anderson, Simpson Sears Ltd. *
Michael Hind-Smith, Foster Advertising Ltd.*
Robert McDougall, Bank cf Montreal *

4.   Urban Transportation

D. Scrafton, Ministry of Transport (Chairman)
A. J. Dakin, University of Torontc *
I. A. Gabbour, University of Montreal *
Robert M. Knox, TRW Systems Ltd. *
Lee S. Sims, Ministry of Transport *

5.   Urban Environment

M. Chevalier, University of Montreal
                          (Chairman)
M. Barcelo, University of Montreal
P. Horsbrugh, University of Notre Dame
Alex Murray, York University *

Workshop Chairmen:

>   G. Bergeron, Department of Communications
>   C. Lemyre, University of Ottawa
>   De Montigny Marchand, Department of
>   Communications
>   A. Nantel, Central Mortgage and Housing
>   Corporation
>   D. Scrafton, Ministry of Transport

* Position Papers available on request.

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